

# SEQUENCE LISTING

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<120> Therapeutic TB Vaccine

<130> SSI5AUSA

<150> DK PA 2002 01098

<151> 2002-07-13

<150> US 60/401,725

<151> 2002-08-07

<160> 187

<170> PatentIn version 3.2

<210> 1

<211> 273

<212> PRT

<213> Mycobacterium tuberculosis

<400> 1

Val Glu Pro Lys Arg Ser Arg Leu Val Val Cys Ala Pro Glu Pro Ser  
1 5 10 15

His Ala Arg Glu Phe Pro Asp Val Ala Val Phe Ser Gly Gly Arg Ala  
20 25 30

Asn Ala Ser Gln Ala Glu Arg Leu Ala Arg Ala Val Gly Arg Val Leu  
35 40 45

Ala Asp Arg Gly Val Thr Gly Gly Ala Arg Val Arg Leu Thr Met Ala  
50 55 60

Asn Cys Ala Asp Gly Pro Thr Leu Val Gln Ile Asn Leu Gln Val Gly  
65 70 75 80

Asp Thr Pro Leu Arg Ala Gln Ala Ala Thr Ala Gly Ile Asp Asp Leu  
85 90 95

Arg Pro Ala Leu Ile Arg Leu Asp Arg Gln Ile Val Arg Ala Ser Ala  
100 105 110

Gln Trp Cys Pro Arg Pro Trp Pro Asp Arg Pro Arg Arg Arg Leu Thr  
115 120 125

Thr Pro Ala Glu Ala Leu Val Thr Arg Arg Lys Pro Val Val Leu Arg  
130 135 140

Arg Ala Thr Pro Leu Gln Ala Ile Ala Ala Met Asp Ala Met Asp Tyr  
 145 150 155 160

Asp Val His Leu Phe Thr Asp Ala Glu Thr Gly Glu Asp Ala Val Val  
 165 170 175

Tyr Arg Ala Gly Pro Ser Gly Leu Arg Leu Ala Arg Gln His His Val  
 180 185 190

Phe Pro Pro Gly Trp Ser Arg Cys Arg Ala Pro Ala Gly Pro Pro Val  
 195 200 205

Pro Leu Ile Val Asn Ser Arg Pro Thr Pro Val Leu Thr Glu Ala Ala  
 210 215 220

Ala Val Asp Arg Ala Arg Glu His Gly Leu Pro Phe Leu Phe Phe Thr  
 225 230 235 240

Asp Gln Ala Thr Gly Arg Gly Gln Leu Leu Tyr Ser Arg Tyr Asp Gly  
 245 250 255

Asn Leu Gly Leu Ile Thr Pro Thr Gly Asp Gly Val Ala Asp Gly Leu  
 260 265 270

Ala

<210> 2  
 <211> 152  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 2

Met Ser Pro Gly Ser Arg Arg Ala Ser Pro Gln Ser Ala Arg Glu Val  
 1 5 10 15

Val Glu Leu Asp Arg Asp Glu Ala Met Arg Leu Leu Ala Ser Val Asp  
 20 25 30

His Gly Arg Val Val Phe Thr Arg Ala Ala Leu Pro Ala Ile Arg Pro  
 35 40 45

Val Asn His Leu Val Val Asp Gly Arg Val Ile Gly Arg Thr Arg Leu  
 50 55 60

Thr Ala Lys Val Ser Val Ala Val Arg Ser Ser Ala Asp Ala Gly Val  
65 70 75 80

Val Val Ala Tyr Glu Ala Asp Asp Leu Asp Pro Arg Arg Arg Thr Gly  
85 90 95

Trp Ser Val Val Val Thr Gly Leu Ala Thr Glu Val Ser Asp Pro Glu  
100 105 110

Gln Val Ala Arg Tyr Gln Arg Leu Leu His Pro Trp Val Asn Met Ala  
115 120 125

Met Asp Thr Val Val Ala Ile Glu Pro Glu Ile Val Thr Gly Ile Arg  
130 135 140

Ile Val Ala Asp Ser Arg Thr Pro  
145 150

<210> 3  
<211> 114  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 3

Val Glu Ser Glu Pro Leu Tyr Lys Leu Lys Ala Glu Phe Phe Lys Thr  
1 5 10 15

Leu Ala His Pro Ala Arg Ile Arg Ile Leu Glu Leu Leu Val Glu Arg  
20 25 30

Asp Arg Ser Val Gly Glu Leu Leu Ser Ser Asp Val Gly Leu Glu Ser  
35 40 45

Ser Asn Leu Ser Gln Gln Leu Gly Val Leu Arg Arg Ala Gly Val Val  
50 55 60

Ala Ala Arg Arg Asp Gly Asn Ala Met Ile Tyr Ser Ile Ala Ala Pro  
65 70 75 80

Asp Ile Ala Glu Leu Leu Ala Val Ala Arg Lys Val Leu Ala Arg Val  
85 90 95

Leu Ser Asp Arg Val Ala Val Leu Glu Asp Leu Arg Ala Gly Gly Ser  
100 105 110

Ala Thr

<210> 4  
 <211> 344  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 4

Met Pro Ile Ala Thr Pro Glu Val Tyr Ala Glu Met Leu Gly Gln Ala  
 1 5 10 15

Lys Gln Asn Ser Tyr Ala Phe Pro Ala Ile Asn Cys Thr Ser Ser Glu  
 20 25 30

Thr Val Asn Ala Ala Ile Lys Gly Phe Ala Asp Ala Gly Ser Asp Gly  
 35 40 45

Ile Ile Gln Phe Ser Thr Gly Gly Ala Glu Phe Gly Ser Gly Leu Gly  
 50 55 60

Val Lys Asp Met Val Thr Gly Ala Val Ala Leu Ala Glu Phe Thr His  
 65 70 75 80

Val Ile Ala Ala Lys Tyr Pro Val Asn Val Ala Leu His Thr Asp His  
 85 90 95

Cys Pro Lys Asp Lys Leu Asp Ser Tyr Val Arg Pro Leu Leu Ala Ile  
 100 105 110

Ser Ala Gln Arg Val Ser Lys Gly Gly Asn Pro Leu Phe Gln Ser His  
 115 120 125

Met Trp Asp Gly Ser Ala Val Pro Ile Asp Glu Asn Leu Ala Ile Ala  
 130 135 140

Gln Glu Leu Leu Lys Ala Ala Ala Ala Ala Lys Ile Ile Leu Glu Ile  
 145 150 155 160

Glu Ile Gly Val Val Gly Gly Glu Glu Asp Gly Val Ala Asn Glu Ile  
 165 170 175

Asn Glu Lys Leu Tyr Thr Ser Pro Glu Asp Phe Glu Lys Thr Ile Glu  
 180 185 190

Ala Leu Gly Ala Gly Glu His Gly Lys Tyr Leu Leu Ala Ala Thr Phe  
 195 200 205

Gly Asn Val His Gly Val Tyr Lys Pro Gly Asn Val Lys Leu Arg Pro  
 210 215 220

Asp Ile Leu Ala Gln Gly Gln Gln Val Ala Ala Ala Lys Leu Gly Leu  
 225 230 235 240

Pro Ala Asp Ala Lys Pro Phe Asp Phe Val Phe His Gly Gly Ser Gly  
 245 250 255

Ser Leu Lys Ser Glu Ile Glu Glu Ala Leu Arg Tyr Gly Val Val Lys  
 260 265 270

Met Asn Val Asp Thr Asp Thr Gln Tyr Ala Phe Thr Arg Pro Ile Ala  
 275 280 285

Gly His Met Phe Thr Asn Tyr Asp Gly Val Leu Lys Val Asp Gly Glu  
 290 295 300

Val Gly Val Lys Lys Val Tyr Asp Pro Arg Ser Tyr Leu Lys Lys Ala  
 305 310 315 320

Glu Ala Ser Met Ser Gln Arg Val Val Gln Ala Cys Asn Asp Leu His  
 325 330 335

Cys Ala Gly Lys Ser Leu Thr His  
 340

<210> 5  
 <211> 113  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 5

Met Gly Glu His Ala Ile Lys Arg His Met Arg Gln Arg Lys Pro Thr  
 1 5 10 15

Lys His Pro Leu Ala Gln Lys Arg Gly Ala Arg Ile Leu Val Phe Thr  
 20 25 30

Asp Asp Pro Arg Arg Ser Val Leu Ile Val Pro Gly Cys His Leu Asp  
 35 40 45

Ser Met Arg Arg Glu Lys Asn Ala Tyr Tyr Phe Gln Asp Gly Asn Ala  
 50 55 60

Leu Val Gly Met Val Val Ser Gly Gly Thr Val Glu Tyr Asp Ala Asp  
 65 70 75 80

Asp Arg Thr Tyr Val Val Gln Leu Thr Asp Gly Arg His Thr Thr Glu  
85 90 95

Ser Ser Phe Glu His Ser Ser Pro Ser Arg Ser Pro Gln Ser Asp Asp  
100 105 110

Leu

<210> 6  
<211> 380  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 6

Val Ala Gly Asn Pro Asp Val Val Thr Val Leu Leu Gly Gly Asp Val  
1 5 10 15

Met Leu Gly Arg Gly Val Asp Gln Ile Leu Pro His Pro Gly Lys Pro  
20 25 30

Gln Leu Arg Glu Arg Tyr Met Arg Asp Ala Thr Gly Tyr Val Arg Leu  
35 40 45

Ala Glu Arg Val Asn Gly Arg Ile Pro Leu Pro Val Asp Trp Arg Trp  
50 55 60

Pro Trp Gly Glu Ala Leu Ala Val Leu Glu Asn Thr Ala Thr Asp Val  
65 70 75 80

Cys Leu Ile Asn Leu Glu Thr Thr Ile Thr Ala Asp Gly Glu Phe Ala  
85 90 95

Asp Arg Lys Pro Val Cys Tyr Arg Met His Pro Asp Asn Val Pro Ala  
100 105 110

Leu Thr Ala Leu Arg Pro His Val Cys Ala Leu Ala Asn Asn His Ile  
115 120 125

Leu Asp Phe Gly Tyr Gln Gly Leu Thr Asp Thr Val Ala Ala Leu Ala  
130 135 140

Gly Ala Gly Ile Gln Ser Val Gly Ala Gly Ala Asp Leu Leu Ala Ala  
145 150 155 160

Arg Arg Ser Ala Leu Val Thr Val Gly His Glu Arg Arg Val Ile Val  
165 170 175

Gly Ser Val Ala Ala Glu Ser Ser Gly Val Pro Glu Ser Trp Ala Ala  
180 185 190

Arg Arg Asp Arg Pro Gly Val Trp Leu Ile Arg Asp Pro Ala Gln Arg  
195 200 205

Asp Val Ala Asp Asp Val Ala Ala Gln Val Leu Ala Asp Lys Arg Pro  
210 215 220

Gly Asp Ile Ala Ile Val Ser Met His Trp Gly Ser Asn Trp Gly Tyr  
225 230 235 240

Ala Thr Ala Pro Gly Asp Val Ala Phe Ala His Arg Leu Ile Asp Ala  
245 250 255

Gly Ile Asp Met Val His Gly His Ser Ser His His Pro Arg Pro Ile  
260 265 270

Glu Ile Tyr Arg Gly Lys Pro Ile Leu Tyr Gly Cys Gly Asp Val Val  
275 280 285

Asp Asp Tyr Glu Gly Ile Gly Gly His Glu Ser Phe Arg Ser Glu Leu  
290 295 300

Arg Leu Leu Tyr Leu Thr Val Thr Asp Pro Ala Ser Gly Asn Leu Ile  
305 310 315 320

Ser Leu Gln Met Leu Pro Leu Arg Val Ser Arg Met Arg Leu Gln Arg  
325 330 335

Ala Ser Gln Thr Asp Thr Glu Trp Leu Arg Asn Thr Ile Glu Arg Ile  
340 345 350

Ser Arg Arg Phe Gly Ile Arg Val Val Thr Arg Pro Asp Asn Leu Leu  
355 360 365

Glu Val Val Pro Ala Ala Asn Leu Thr Ser Lys Glu  
370 375 380

<210> 7  
<211> 397  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 7

Val Thr Asp His Val Arg Glu Ala Asp Asp Ala Asn Ile Asp Asp Leu  
1 5 10 15

Leu Gly Asp Leu Gly Gly Thr Ala Arg Ala Glu Arg Ala Lys Leu Val  
20 25 30

Glu Trp Leu Leu Glu Gln Gly Ile Thr Pro Asp Glu Ile Arg Ala Thr  
35 40 45

Asn Pro Pro Leu Leu Leu Ala Thr Arg His Leu Val Gly Asp Asp Gly  
50 55 60

Thr Tyr Val Ser Ala Arg Glu Ile Ser Glu Asn Tyr Gly Val Asp Leu  
65 70 75 80

Glu Leu Leu Gln Arg Val Gln Arg Ala Val Gly Leu Ala Arg Val Asp  
85 90 95

Asp Pro Asp Ala Val Val His Met Arg Ala Asp Gly Glu Ala Ala Ala  
100 105 110

Arg Ala Gln Arg Phe Val Glu Leu Gly Leu Asn Pro Asp Gln Val Val  
115 120 125

Leu Val Val Arg Val Leu Ala Glu Gly Leu Ser His Ala Ala Glu Ala  
130 135 140

Met Arg Tyr Thr Ala Leu Glu Ala Ile Met Arg Pro Gly Ala Thr Glu  
145 150 155 160

Leu Asp Ile Ala Lys Gly Ser Gln Ala Leu Val Ser Gln Ile Val Pro  
165 170 175

Leu Leu Gly Pro Met Ile Gln Asp Met Leu Phe Met Gln Leu Arg His  
180 185 190

Met Met Glu Thr Glu Ala Val Asn Ala Gly Glu Arg Ala Ala Gly Lys  
195 200 205

Pro Leu Pro Gly Ala Arg Gln Val Thr Val Ala Phe Ala Asp Leu Val  
210 215 220

Gly Phe Thr Gln Leu Gly Glu Val Val Ser Ala Glu Glu Leu Gly His  
225 230 235 240



Leu Ala Gly Arg Leu Ala Gly Leu Ala Arg Asp Leu Thr Ala Pro Pro  
245 250 255

Val Trp Phe Ile Lys Thr Ile Gly Asp Ala Val Met Leu Val Cys Pro  
260 265 270

Asp Pro Ala Pro Leu Leu Asp Thr Val Leu Lys Leu Val Glu Val Val  
275 280 285

Asp Thr Asp Asn Asn Phe Pro Arg Leu Arg Ala Gly Val Ala Ser Gly  
290 295 300

Met Ala Val Ser Arg Ala Gly Asp Trp Phe Gly Ser Pro Val Asn Val  
305 310 315 320

Ala Ser Arg Val Thr Gly Val Ala Arg Pro Gly Ala Val Leu Val Ala  
325 330 335

Asp Ser Val Arg Glu Ala Leu Gly Asp Ala Pro Glu Ala Asp Gly Phe  
340 345 350

Gln Trp Ser Phe Ala Gly Pro Arg Arg Leu Arg Gly Ile Arg Gly Asp  
355 360 365

Val Arg Leu Phe Arg Val Arg Arg Gly Ala Thr Arg Thr Gly Ser Gly  
370 375 380

Gly Ala Ala Gln Asp Asp Asp Leu Ala Gly Ser Ser Pro  
385 390 395

<210> 8  
<211> 446  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 8

Met Val Glu Pro Gly Asn Leu Ala Gly Ala Thr Gly Ala Glu Trp Ile  
1 5 10 15

Gly Arg Pro Pro His Glu Glu Leu Gln Arg Lys Val Arg Pro Leu Leu  
20 25 30

Pro Ser Asp Asp Pro Phe Tyr Phe Pro Pro Ala Gly Tyr Gln His Ala  
35 40 45

Val Pro Gly Thr Val Leu Arg Ser Arg Asp Val Glu Leu Ala Phe Met  
50 55 60

Gly Leu Ile Pro Gln Pro Val Thr Ala Thr Gln Leu Leu Tyr Arg Thr  
 65 70 75 80

Thr Asn Met Tyr Gly Asn Pro Glu Ala Thr Val Thr Thr Val Ile Val  
 85 90 95

Pro Ala Glu Leu Ala Pro Gly Gln Thr Cys Pro Leu Leu Ser Tyr Gln  
 100 105 110

Cys Ala Ile Asp Ala Met Ser Ser Arg Cys Phe Pro Ser Tyr Ala Leu  
 115 120 125

Arg Arg Arg Ala Lys Ala Leu Gly Ser Leu Thr Gln Met Glu Leu Leu  
 130 135 140

Met Ile Ser Ala Ala Leu Ala Glu Gly Trp Ala Val Ser Val Pro Asp  
 145 150 155 160

His Glu Gly Pro Lys Gly Leu Trp Gly Ser Pro Tyr Glu Pro Gly Tyr  
 165 170 175

Arg Val Leu Asp Gly Ile Arg Ala Ala Leu Asn Ser Glu Arg Val Gly  
 180 185 190

Leu Ser Pro Ala Thr Pro Ile Gly Leu Trp Gly Tyr Ser Gly Gly Gly  
 195 200 205

Leu Ala Ser Ala Trp Ala Ala Glu Ala Cys Gly Glu Tyr Ala Pro Asp  
 210 215 220

Leu Asp Ile Val Gly Ala Val Leu Gly Ser Pro Val Gly Asp Leu Gly  
 225 230 235 240

His Thr Phe Arg Arg Leu Asn Gly Thr Leu Leu Ala Gly Leu Pro Ala  
 245 250 255

Leu Val Val Ala Ala Leu Gln His Ser Tyr Pro Gly Leu Ala Arg Val  
 260 265 270

Ile Lys Glu His Ala Asn Asp Glu Gly Arg Gln Leu Leu Glu Gln Leu  
 275 280 285

Thr Glu Met Thr Thr Val Asp Ala Val Ile Arg Met Ala Gly Arg Asp  
 290 295 300

Met Gly Asp Phe Leu Asp Glu Pro Leu Glu Asp Ile Leu Ser Thr Pro  
 305 310 315 320

Glu Ile Ser His Val Phe Gly Asp Thr Lys Leu Gly Ser Ala Val Pro  
 325 330 335

Thr Pro Pro Val Leu Ile Val Gln Ala Val His Asp Tyr Leu Ile Asp  
 340 345 350

Val Ser Asp Ile Asp Ala Leu Ala Asp Ser Tyr Thr Ala Gly Gly Ala  
 355 360 365

Asn Val Thr Tyr His Arg Asp Leu Phe Ser Glu His Val Ser Leu His  
 370 375 380

Pro Leu Ser Ala Pro Met Thr Leu Arg Trp Leu Thr Asp Arg Phe Ala  
 385 390 395 400

Gly Lys Pro Leu Thr Asp His Arg Val Arg Thr Thr Trp Pro Thr Ile  
 405 410 415

Phe Asn Pro Met Thr Tyr Ala Gly Met Ala Arg Leu Ala Val Ile Ala  
 420 425 430

Ala Lys Val Ile Thr Gly Arg Lys Leu Ser Arg Arg Pro Leu  
 435 440 445

<210> 9  
 <211> 210  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 9

Met Ile Ala Thr Thr Arg Asp Arg Glu Gly Ala Thr Met Ile Thr Phe  
 1 5 10 15

Arg Leu Arg Leu Pro Cys Arg Thr Ile Leu Arg Val Phe Ser Arg Asn  
 20 25 30

Pro Leu Val Arg Gly Thr Asp Arg Leu Glu Ala Val Val Met Leu Leu  
 35 40 45

Ala Val Thr Val Ser Leu Leu Thr Ile Pro Phe Ala Ala Ala Ala Gly  
 50 55 60

Thr Ala Val Gln Asp Ser Arg Ser His Val Tyr Ala His Gln Ala Gln  
 65 70 75 80

Thr Arg His Pro Ala Thr Ala Thr Val Ile Asp His Glu Gly Val Ile  
85 90 95

Asp Ser Asn Thr Thr Ala Thr Ser Ala Pro Pro Arg Thr Lys Ile Thr  
100 105 110

Val Pro Ala Arg Trp Val Val Asn Gly Ile Glu Arg Ser Gly Glu Val  
115 120 125

Asn Ala Lys Pro Gly Thr Lys Ser Gly Asp Arg Val Gly Ile Trp Val  
130 135 140

Asp Ser Ala Gly Gln Leu Val Asp Glu Pro Ala Pro Pro Ala Arg Ala  
145 150 155 160

Ile Ala Asp Ala Ala Leu Ala Ala Leu Gly Leu Trp Leu Ser Val Ala  
165 170 175

Ala Val Ala Gly Ala Leu Leu Ala Leu Thr Arg Ala Ile Leu Ile Arg  
180 185 190

Val Arg Asn Ala Ser Trp Gln His Asp Ile Asp Ser Leu Phe Cys Thr  
195 200 205

Gln Arg  
210

<210> 10  
<211> 80  
<212> PRT  
<213> Mycobacterium tuberculosis  
<400> 10

Met Thr Asn Val Gly Asp Gln Gly Val Asp Ala Val Phe Gly Val Ile  
1 5 10 15

Tyr Pro Pro Gln Val Ala Leu Val Ser Phe Gly Lys Pro Ala Gln Arg  
20 25 30

Val Cys Ala Val Asp Gly Ala Ile His Val Met Thr Thr Val Leu Ala  
35 40 45

Thr Leu Pro Ala Asp His Gly Cys Ser Asp Asp His Arg Gly Ala Leu  
50 55 60

Phe Phe Leu Ser Ile Asn Glu Leu Thr Arg Cys Ala Ala Val Thr Gly  
65 70 75 80

<210> 11  
<211> 652  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 11

Val Thr Val Thr Pro Arg Thr Gly Ser Arg Ile Glu Glu Leu Leu Ala  
1 5 10 15

Arg Ser Gly Arg Phe Phe Ile Pro Gly Glu Ile Ser Ala Asp Leu Arg  
20 25 30

Thr Val Thr Arg Arg Gly Gly Arg Asp Gly Asp Val Phe Tyr Arg Asp  
35 40 45

Arg Trp Ser His Asp Lys Val Val Arg Ser Thr His Gly Val Asn Cys  
50 55 60

Thr Gly Ser Cys Ser Trp Lys Ile Tyr Val Lys Asp Asp Ile Ile Thr  
65 70 75 80

Trp Glu Thr Gln Glu Thr Asp Tyr Pro Ser Val Gly Pro Asp Arg Pro  
85 90 95

Glu Tyr Glu Pro Arg Gly Cys Pro Arg Gly Ala Ala Phe Ser Trp Tyr  
100 105 110

Thr Tyr Ser Pro Thr Arg Val Arg His Pro Tyr Ala Arg Gly Val Leu  
115 120 125

Val Glu Met Tyr Arg Glu Ala Lys Ala Arg Leu Gly Asp Pro Val Ala  
130 135 140

Ala Trp Ala Asp Ile Gln Ala Asp Pro Arg Arg Arg Arg Arg Tyr Gln  
145 150 155 160

Arg Ala Arg Gly Lys Gly Gly Leu Val Arg Val Ser Trp Ala Glu Ala  
165 170 175

Thr Glu Met Ile Ala Ala Ala His Val His Thr Ile Ser Thr Tyr Gly  
180 185 190

Pro Asp Arg Val Ala Gly Phe Ser Pro Ile Pro Ala Met Ser Met Val  
195 200 205

Ser His Ala Ala Gly Ser Arg Phe Val Glu Leu Ile Gly Gly Val Met  
 210 215 220

Thr Ser Phe Tyr Asp Trp Tyr Ala Asp Leu Pro Val Ala Ser Pro Gln  
 225 230 235 240

Val Phe Gly Asp Gln Thr Asp Val Pro Glu Ser Gly Asp Trp Trp Asp  
 245 250 255

Val Val Trp Gln Cys Ala Ser Val Leu Leu Thr Tyr Pro Asn Ser Arg  
 260 265 270

Gln Leu Gly Thr Ala Glu Glu Leu Leu Ala His Ile Asp Gly Pro Ala  
 275 280 285

Ala Asp Leu Leu Gly Arg Thr Val Ser Glu Leu Arg Arg Ala Asp Pro  
 290 295 300

Leu Thr Ala Ala Thr Arg Tyr Val Asp Thr Phe Asp Leu Arg Gly Arg  
 305 310 315 320

Ala Thr Leu Tyr Leu Thr Tyr Trp Thr Ala Gly Asp Thr Arg Asn Arg  
 325 330 335

Gly Arg Glu Met Leu Ala Phe Ala Gln Thr Tyr Arg Ser Thr Asp Val  
 340 345 350

Ala Pro Pro Arg Gly Glu Thr Pro Asp Phe Leu Pro Val Val Leu Glu  
 355 360 365

Phe Ala Ala Thr Val Asp Pro Glu Ala Gly Arg Arg Leu Leu Ser Gly  
 370 375 380

Tyr Arg Val Pro Ile Ala Ala Leu Cys Asn Ala Leu Thr Glu Ala Ala  
 385 390 395 400

Leu Pro Tyr Ala His Thr Val Ala Ala Val Cys Arg Thr Gly Asp Met  
 405 410 415

Met Gly Glu Leu Phe Trp Thr Val Val Pro Tyr Val Thr Met Thr Ile  
 420 425 430

Val Ala Val Gly Ser Trp Trp Arg Tyr Arg Tyr Asp Lys Phe Gly Trp  
 435 440 445

Thr Thr Arg Ser Ser Gln Leu Tyr Glu Ser Arg Leu Leu Arg Ile Ala  
 450 455 460

Ser Pro Met Phe His Phe Gly Ile Leu Val Val Ile Val Gly His Gly  
 465 470 475 480

Ile Gly Leu Val Ile Pro Gln Ser Trp Thr Gln Ala Ala Gly Leu Ser  
 485 490 495

Glu Gly Ala Tyr His Val Gln Ala Val Val Leu Gly Ser Ile Ala Gly  
 500 505 510

Ile Thr Thr Leu Ala Gly Val Thr Leu Leu Ile Tyr Arg Arg Arg Thr  
 515 520 525

Arg Gly Pro Val Phe Met Ala Thr Thr Val Asn Asp Lys Val Met Tyr  
 530 535 540

Leu Val Leu Val Ala Ala Ile Val Ala Gly Leu Gly Ala Thr Ala Leu  
 545 550 555 560

Gly Ser Gly Val Val Gly Glu Ala Tyr Asn Tyr Arg Glu Thr Val Ser  
 565 570 575

Val Trp Phe Arg Ser Val Trp Val Leu Gln Pro Arg Gly Asp Leu Met  
 580 585 590

Ala Glu Ala Pro Leu Tyr Tyr Gln Ile His Val Leu Ile Gly Leu Ala  
 595 600 605

Leu Phe Ala Leu Trp Pro Phe Thr Arg Leu Val His Ala Phe Ser Ala  
 610 615 620

Pro Ile Gly Tyr Leu Phe Arg Pro Tyr Ile Ile Tyr Arg Ser Arg Glu  
 625 630 635 640

Glu Leu Val Leu Thr Arg Pro Arg Arg Arg Gly Trp  
 645 650

<210> 12  
 <211> 395  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 12

Met Arg Gly Gln Ala Ala Asn Leu Val Leu Ala Thr Trp Ile Ser Val  
 1 5 10 15

Val Asn Phe Trp Ala Trp Asn Leu Ile Gly Pro Leu Ser Thr Ser Tyr  
20 25 30

Ala Arg Asp Met Ser Leu Ser Ser Ala Glu Ala Ser Leu Leu Val Ala  
35 40 45

Thr Pro Ile Leu Val Gly Ala Leu Gly Arg Ile Val Thr Gly Pro Leu  
50 55 60

Thr Asp Arg Phe Gly Gly Arg Ala Met Leu Ile Ala Val Thr Leu Ala  
65 70 75 80

Ser Ile Leu Pro Val Leu Ala Val Gly Val Ala Ala Thr Met Gly Ser  
85 90 95

Tyr Ala Leu Leu Val Phe Phe Gly Leu Phe Leu Gly Val Ala Gly Thr  
100 105 110

Ile Phe Ala Val Gly Ile Pro Phe Ala Asn Asn Trp Tyr Gln Pro Ala  
115 120 125

Arg Arg Gly Phe Ser Thr Gly Val Phe Gly Met Gly Met Val Gly Thr  
130 135 140

Ala Leu Ser Ala Phe Phe Thr Pro Arg Phe Val Arg Trp Phe Gly Leu  
145 150 155 160

Phe Thr Thr His Ala Ile Val Ala Ala Ala Leu Ala Ser Thr Ala Val  
165 170 175

Val Ala Met Val Val Leu Arg Asp Ala Pro Tyr Phe Arg Pro Asn Ala  
180 185 190

Asp Pro Val Leu Pro Arg Leu Lys Ala Ala Ala Arg Leu Pro Val Thr  
195 200 205

Trp Glu Met Ser Phe Leu Tyr Ala Ile Val Phe Gly Gly Phe Val Ala  
210 215 220

Phe Ser Asn Tyr Leu Pro Thr Tyr Ile Thr Thr Ile Tyr Gly Phe Ser  
225 230 235 240

Thr Val Asp Ala Gly Ala Arg Thr Ala Gly Phe Ala Leu Ala Ala Val  
245 250 255



Leu Ala Arg Pro Val Gly Gly Trp Leu Ser Asp Arg Ile Ala Pro Arg  
260 265 270

His Val Val Leu Ala Ser Leu Ala Gly Thr Ala Leu Leu Ala Phe Ala  
275 280 285

Ala Ala Leu Gln Pro Pro Pro Glu Val Trp Ser Ala Ala Thr Phe Ile  
290 295 300

Thr Leu Ala Val Cys Leu Gly Val Gly Thr Gly Gly Val Phe Ala Trp  
305 310 315 320

Val Ala Arg Arg Ala Pro Ala Ala Ser Val Gly Ser Val Thr Gly Ile  
325 330 335

Val Ala Ala Ala Gly Gly Leu Gly Gly Tyr Phe Pro Pro Leu Val Met  
340 345 350

Gly Ala Thr Tyr Asp Pro Val Asp Asn Asp Tyr Thr Val Gly Leu Leu  
355 360 365

Leu Leu Val Ala Thr Ala Leu Val Ala Cys Thr Tyr Thr Ala Leu His  
370 375 380

Ala Arg Glu Pro Val Ser Glu Glu Ala Ser Arg  
385 390 395

<210> 13  
<211> 94  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 13

Met Cys Gly Asp Gln Ser Asp His Val Leu Gln His Trp Thr Val Asp  
1 5 10 15

Ile Ser Ile Asp Glu His Glu Gly Leu Thr Arg Ala Lys Ala Arg Leu  
20 25 30

Arg Trp Arg Glu Lys Glu Leu Val Gly Val Gly Leu Ala Arg Leu Asn  
35 40 45

Pro Ala Asp Arg Asn Val Pro Glu Ile Gly Asp Glu Leu Ser Val Ala  
50 55 60

Arg Ala Leu Ser Asp Leu Gly Lys Arg Met Leu Lys Val Ser Thr His  
65 70 75 80

Asp Ile Glu Ala Val Thr His Gln Pro Ala Arg Leu Leu Tyr  
85 90

<210> 14  
<211> 560  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 14

Met Ile Pro Thr Met Thr Ser Ala Gly Trp Ala Pro Gly Val Val Gln  
1 5 10 15

Phe Arg Glu Tyr Gln Arg Arg Trp Leu Arg Gly Asp Val Leu Ala Gly  
20 25 30

Leu Thr Val Ala Ala Tyr Leu Ile Pro Gln Ala Met Ala Tyr Ala Thr  
35 40 45

Val Ala Gly Leu Pro Pro Ala Ala Gly Leu Trp Ala Ser Ile Ala Pro  
50 55 60

Leu Ala Ile Tyr Ala Leu Leu Gly Ser Ser Arg Gln Leu Ser Ile Gly  
65 70 75 80

Pro Glu Ser Ala Thr Ala Leu Met Thr Ala Ala Val Leu Ala Pro Met  
85 90 95

Ala Ala Gly Asp Leu Arg Arg Tyr Ala Val Leu Ala Ala Thr Leu Gly  
100 105 110

Leu Leu Val Gly Leu Ile Cys Leu Leu Ala Gly Thr Ala Arg Leu Gly  
115 120 125

Phe Leu Ala Ser Leu Arg Ser Arg Pro Val Leu Val Gly Tyr Met Ala  
130 135 140

Gly Ile Ala Leu Val Met Ile Ser Ser Gln Leu Gly Thr Ile Thr Gly  
145 150 155 160

Thr Ser Val Glu Gly Asn Glu Phe Phe Ser Glu Val His Ser Phe Ala  
165 170 175

Thr Ser Val Thr Arg Val His Trp Pro Thr Phe Val Leu Ala Met Ser  
180 185 190

Val Leu Ala Leu Leu Thr Met Leu Thr Arg Trp Ala Pro Arg Ala Pro  
195 200 205  
Gly Pro Ile Ile Ala Val Leu Ala Ala Thr Met Leu Val Ala Val Met  
210 215 220  
Ser Leu Asp Ala Lys Gly Ile Ala Ile Val Gly Arg Ile Pro Ser Gly  
225 230 235 240  
Leu Pro Thr Pro Gly Val Pro Pro Val Ser Val Glu Asp Leu Arg Ala  
245 250 255  
Leu Ile Ile Pro Ala Ala Gly Ile Ala Ile Val Thr Phe Thr Asp Gly  
260 265 270  
Val Leu Thr Ala Arg Ala Phe Ala Ala Arg Arg Gly Gln Glu Val Asn  
275 280 285  
Ala Asn Ala Glu Leu Arg Ala Val Gly Ala Cys Asn Ile Ala Ala Gly  
290 295 300  
Leu Thr His Gly Phe Pro Val Ser Ser Ser Ser Ser Arg Thr Ala Leu  
305 310 315 320  
Ala Asp Val Val Gly Gly Arg Thr Gln Leu Tyr Ser Leu Ile Ala Leu  
325 330 335  
Gly Leu Val Val Ile Val Met Val Phe Ala Ser Gly Leu Leu Ala Met  
340 345 350  
Phe Pro Ile Ala Ala Leu Gly Ala Leu Val Val Tyr Ala Ala Leu Arg  
355 360 365  
Leu Ile Asp Leu Ser Glu Phe Arg Arg Leu Ala Arg Phe Arg Arg Ser  
370 375 380  
Glu Leu Met Leu Ala Leu Ala Thr Thr Ala Ala Val Leu Gly Leu Gly  
385 390 395 400  
Val Phe Tyr Gly Val Leu Ala Ala Val Ala Leu Ser Ile Leu Glu Leu  
405 410 415  
Leu Arg Arg Val Ala His Pro His Asp Ser Val Leu Gly Phe Val Pro  
420 425 430

Gly Ile Ala Gly Met His Asp Ile Asp Asp Tyr Pro Gln Ala Lys Arg  
435 440 445

Val Pro Gly Leu Val Val Tyr Arg Tyr Asp Ala Pro Leu Cys Phe Ala  
450 455 460

Asn Ala Glu Asp Phe Arg Arg Arg Ala Leu Thr Val Val Asp Gln Asp  
465 470 475 480

Pro Gly Gln Val Glu Trp Phe Val Leu Asn Ala Glu Ser Asn Val Glu  
485 490 495

Val Asp Leu Thr Ala Leu Asp Ala Leu Asp Gln Leu Arg Thr Glu Leu  
500 505 510

Leu Arg Arg Gly Ile Val Phe Ala Met Ala Arg Val Lys Gln Asp Leu  
515 520 525

Arg Glu Ser Leu Arg Ala Ala Ser Leu Leu Asp Lys Ile Gly Glu Asp  
530 535 540

His Ile Phe Met Thr Leu Pro Thr Ala Val Gln Ala Phe Arg Arg Arg  
545 550 555 560

<210> 15  
<211> 143  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 15

Met Ile Thr Asn Leu Arg Arg Arg Thr Ala Met Ala Ala Ala Gly Leu  
1 5 10 15

Gly Ala Ala Leu Gly Leu Gly Ile Leu Leu Val Pro Thr Val Asp Ala  
20 25 30

His Leu Ala Asn Gly Ser Met Ser Glu Val Met Met Ser Glu Ile Ala  
35 40 45

Gly Leu Pro Ile Pro Pro Ile Ile His Tyr Gly Ala Ile Ala Tyr Ala  
50 55 60

Pro Ser Gly Ala Ser Gly Lys Ala Trp His Gln Arg Thr Pro Ala Arg  
65 70 75 80

Ala Glu Gln Val Ala Leu Glu Lys Cys Gly Asp Lys Thr Cys Lys Val  
85 90 95

Val Ser Arg Phe Thr Arg Cys Gly Ala Val Ala Tyr Asn Gly Ser Lys  
100 105 110

Tyr Gln Gly Gly Thr Gly Leu Thr Arg Arg Ala Ala Glu Asp Asp Ala  
115 120 125

Val Asn Arg Leu Glu Gly Gly Arg Ile Val Asn Trp Ala Cys Asn  
130 135 140

<210> 16  
<211> 905  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 16

Leu Ser Ala Ser Val Ser Ala Thr Thr Ala His His Gly Leu Pro Ala  
1 5 10 15

His Glu Val Val Leu Leu Leu Glu Ser Asp Pro Tyr His Gly Leu Ser  
20 25 30

Asp Gly Glu Ala Ala Gln Arg Leu Glu Arg Phe Gly Pro Asn Thr Leu  
35 40 45

Ala Val Val Thr Arg Ala Ser Leu Leu Ala Arg Ile Leu Arg Gln Phe  
50 55 60

His His Pro Leu Ile Tyr Val Leu Leu Val Ala Gly Thr Ile Thr Ala  
65 70 75 80

Gly Leu Lys Glu Phe Val Asp Ala Ala Val Ile Phe Gly Val Val Val  
85 90 95

Ile Asn Ala Ile Val Gly Phe Ile Gln Glu Ser Lys Ala Glu Ala Ala  
100 105 110

Leu Gln Gly Leu Arg Ser Met Val His Thr His Ala Lys Val Val Arg  
115 120 125

Glu Gly His Glu His Thr Met Pro Ser Glu Glu Leu Val Pro Gly Asp  
130 135 140

Leu Val Leu Leu Ala Ala Gly Asp Lys Val Pro Ala Asp Leu Arg Leu  
145 150 155 160

Val Arg Gln Thr Gly Leu Ser Val Asn Glu Ser Ala Leu Thr Gly Glu  
 165 170 175

Ser Thr Pro Val His Lys Asp Glu Val Ala Leu Pro Glu Gly Thr Pro  
 180 185 190

Val Ala Asp Arg Arg Asn Ile Ala Tyr Ser Gly Thr Leu Val Thr Ala  
 195 200 205

Gly His Gly Ala Gly Ile Val Val Ala Thr Gly Ala Glu Thr Glu Leu  
 210 215 220

Gly Glu Ile His Arg Leu Val Gly Ala Ala Glu Val Val Ala Thr Pro  
 225 230 235 240

Leu Thr Ala Lys Leu Ala Trp Phe Ser Lys Phe Leu Thr Ile Ala Ile  
 245 250 255

Leu Gly Leu Ala Ala Leu Thr Phe Gly Val Gly Leu Leu Arg Arg Gln  
 260 265 270

Asp Ala Val Glu Thr Phe Thr Ala Ala Ile Ala Leu Ala Val Gly Ala  
 275 280 285

Ile Pro Glu Gly Leu Pro Thr Ala Val Thr Ile Thr Leu Ala Ile Gly  
 290 295 300

Met Ala Arg Met Ala Lys Arg Arg Ala Val Ile Arg Arg Leu Pro Ala  
 305 310 315 320

Val Glu Thr Leu Gly Ser Thr Thr Val Ile Cys Ala Asp Lys Thr Gly  
 325 330 335

Thr Leu Thr Glu Asn Gln Met Thr Val Gln Ser Ile Trp Thr Pro His  
 340 345 350

Gly Glu Ile Arg Ala Thr Gly Thr Gly Tyr Ala Pro Asp Val Leu Leu  
 355 360 365

Cys Asp Thr Asp Asp Ala Pro Val Pro Val Asn Ala Asn Ala Ala Leu  
 370 375 380

Arg Trp Ser Leu Leu Ala Gly Ala Cys Ser Asn Asp Ala Ala Leu Val  
 385 390 395 400

Arg Asp Gly Thr Arg Trp Gln Ile Val Gly Asp Pro Thr Glu Gly Ala  
 405 410 415

Met Leu Val Val Ala Ala Lys Ala Gly Phe Asn Pro Glu Arg Leu Ala  
 420 425 430

Thr Thr Leu Pro Gln Val Ala Ala Ile Pro Phe Ser Ser Glu Arg Gln  
 435 440 445

Tyr Met Ala Thr Leu His Arg Asp Gly Thr Asp His Val Val Leu Ala  
 450 455 460

Lys Gly Ala Val Glu Arg Met Leu Asp Leu Cys Gly Thr Glu Met Gly  
 465 470 475 480

Ala Asp Gly Ala Leu Arg Pro Leu Asp Arg Ala Thr Val Leu Arg Ala  
 485 490 495

Thr Glu Met Leu Thr Ser Arg Gly Leu Arg Val Leu Ala Thr Gly Met  
 500 505 510

Gly Ala Gly Ala Gly Thr Pro Asp Asp Phe Asp Glu Asn Val Ile Pro  
 515 520 525

Gly Ser Leu Ala Leu Thr Gly Leu Gln Ala Met Ser Asp Pro Pro Arg  
 530 535 540

Ala Ala Ala Ala Ser Ala Val Ala Ala Cys His Ser Ala Gly Ile Ala  
 545 550 555 560

Val Lys Met Ile Thr Gly Asp His Ala Gly Thr Ala Thr Ala Ile Ala  
 565 570 575

Thr Glu Val Gly Leu Leu Asp Asn Thr Glu Pro Ala Ala Gly Ser Val  
 580 585 590

Leu Thr Gly Ala Glu Leu Ala Ala Leu Ser Ala Asp Gln Tyr Pro Glu  
 595 600 605

Ala Val Asp Thr Ala Ser Val Phe Ala Arg Val Ser Pro Glu Gln Lys  
 610 615 620

Leu Arg Leu Val Gln Ala Leu Gln Ala Arg Gly His Val Val Ala Met  
 625 630 635 640

Thr Gly Asp Gly Val Asn Asp Ala Pro Ala Leu Arg Gln Ala Asn Ile  
 645 650 655

Gly Val Ala Met Gly Arg Gly Gly Thr Glu Val Ala Lys Asp Ala Ala  
 660 665 670

Asp Met Val Leu Thr Asp Asp Asp Phe Ala Thr Ile Glu Ala Ala Val  
 675 680 685

Glu Glu Gly Arg Gly Val Phe Asp Asn Leu Thr Lys Phe Ile Thr Trp  
 690 695 700

Thr Leu Pro Thr Asn Leu Gly Glu Gly Leu Val Ile Leu Ala Ala Ile  
 705 710 715 720

Ala Val Gly Val Ala Leu Pro Ile Leu Pro Thr Gln Ile Leu Trp Ile  
 725 730 735

Asn Met Thr Thr Ala Ile Ala Leu Gly Leu Met Leu Ala Phe Glu Pro  
 740 745 750

Lys Glu Ala Gly Ile Met Thr Arg Pro Pro Arg Asp Pro Asp Gln Pro  
 755 760 765

Leu Leu Thr Gly Trp Leu Val Arg Arg Thr Leu Leu Val Ser Thr Leu  
 770 775 780

Leu Val Ala Ser Ala Trp Trp Leu Phe Ala Trp Glu Leu Asp Asn Gly  
 785 790 795 800

Ala Gly Leu His Glu Ala Arg Thr Ala Ala Leu Asn Leu Phe Val Val  
 805 810 815

Val Glu Ala Phe Tyr Leu Phe Ser Cys Arg Ser Leu Thr Arg Ser Ala  
 820 825 830

Trp Arg Leu Gly Met Phe Ala Asn Arg Trp Ile Ile Leu Gly Val Ser  
 835 840 845

Ala Gln Ala Ile Ala Gln Phe Ala Ile Thr Tyr Leu Pro Ala Met Asn  
 850 855 860

Met Val Phe Asp Thr Ala Pro Ile Asp Ile Gly Val Trp Val Arg Ile  
 865 870 875 880



Phe Ala Val Ala Thr Ala Ile Thr Ile Val Val Ala Thr Asp Thr Leu  
885 890 895

Leu Pro Arg Ile Arg Ala Gln Pro Pro  
900 905

<210> 17  
<211> 258  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 17

Met Ser Phe His Asp Leu His His Gln Gly Val Pro Phe Val Leu Pro  
1 5 10 15

Asn Ala Trp Asp Val Pro Ser Ala Leu Ala Tyr Leu Ala Glu Gly Phe  
20 25 30

Thr Ala Ile Gly Thr Thr Ser Phe Gly Val Ser Ser Ser Gly Gly His  
35 40 45

Pro Asp Gly His Arg Ala Thr Arg Gly Ala Asn Ile Ala Leu Ala Ala  
50 55 60

Ala Leu Ala Pro Leu Gln Cys Tyr Val Ser Val Asp Ile Glu Asp Gly  
65 70 75 80

Tyr Ser Asp Glu Pro Asp Ala Ile Ala Asp Tyr Val Ala Gln Leu Ser  
85 90 95

Thr Ala Gly Ile Asn Ile Glu Asp Ser Ser Ala Glu Lys Leu Ile Asp  
100 105 110

Pro Ala Leu Ala Ala Ala Lys Ile Val Ala Ile Lys Gln Arg Asn Pro  
115 120 125

Glu Val Phe Val Asn Ala Arg Val Asp Thr Tyr Trp Leu Arg Gln His  
130 135 140

Ala Asp Thr Thr Ser Thr Ile Gln Arg Ala Leu Arg Tyr Val Asp Ala  
145 150 155 160

Gly Ala Asp Gly Val Phe Val Pro Leu Ala Asn Asp Pro Asp Glu Leu  
165 170 175

Ala Glu Leu Thr Arg Asn Ile Pro Cys Pro Val Asn Thr Leu Pro Val  
180 185 190

Pro Gly Leu Thr Ile Ala Asp Leu Gly Glu Leu Gly Val Ala Arg Val  
 195 200 205

Ser Thr Gly Ser Val Pro Tyr Ser Ala Gly Leu Tyr Ala Ala Ala His  
 210 215 220

Ala Ala Arg Ala Val Ser Asp Gly Glu Gln Leu Pro Arg Ser Val Pro  
 225 230 235 240

Tyr Ala Glu Leu Gln Ala Arg Leu Val Asp Tyr Glu Asn Arg Thr Ser  
 245 250 255

Thr Thr

<210> 18  
 <211> 285  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 18

Val Val Lys Arg Ser Arg Ala Thr Arg Leu Ser Pro Ser Ile Trp Ser  
 1 5 10 15

Gly Trp Glu Ser Pro Gln Cys Arg Ser Ile Arg Ala Arg Leu Leu Leu  
 20 25 30

Pro Arg Gly Arg Ser Arg Pro Pro Asn Ala Asp Cys Cys Trp Asn Gln  
 35 40 45

Leu Ala Val Thr Pro Asp Thr Arg Met Pro Ala Ser Ser Ala Ala Gly  
 50 55 60

Arg Asp Ala Ala Ala Tyr Asp Ala Trp Tyr Asp Ser Pro Thr Gly Arg  
 65 70 75 80

Pro Ile Leu Ala Thr Glu Val Ala Ala Leu Arg Pro Leu Ile Glu Val  
 85 90 95

Phe Ala Gln Pro Arg Leu Glu Ile Gly Val Gly Thr Gly Arg Phe Ala  
 100 105 110

Asp Leu Leu Gly Val Arg Phe Gly Leu Asp Pro Ser Arg Asp Ala Leu  
 115 120 125

Met Phe Ala Arg Arg Arg Gly Val Leu Val Ala Asn Ala Val Gly Glu  
 130 135 140

Ala Val Pro Phe Val Ser Arg His Phe Gly Ala Val Leu Met Ala Phe  
 145 150 155 160

Thr Leu Cys Phe Val Thr Asp Pro Ala Ala Ile Phe Arg Glu Thr Arg  
 165 170 175

Arg Leu Leu Ala Asp Gly Gly Gly Leu Val Ile Gly Phe Leu Pro Arg  
 180 185 190

Gly Thr Pro Trp Ala Asp Leu Tyr Ala Leu Arg Ala Ala Arg Gly Gln  
 195 200 205

Pro Gly Tyr Arg Asp Ala Arg Phe Tyr Thr Ala Ala Glu Leu Glu Gln  
 210 215 220

Leu Leu Ala Asp Ser Gly Phe Arg Val Ile Ala Arg Arg Cys Thr Leu  
 225 230 235 240

His Gln Pro Pro Gly Leu Ala Arg Tyr Asp Ile Glu Ala Ala His Asp  
 245 250 255

Gly Ile Gln Ala Gly Ala Gly Phe Val Ala Ile Ser Ala Val Asp Gln  
 260 265 270

Ala His Glu Pro Lys Asp Asp His Pro Leu Glu Ser Glu  
 275 280 285

<210> 19  
 <211> 285  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 19

Val Val Lys Arg Ser Arg Ala Thr Arg Leu Ser Pro Ser Ile Trp Ser  
 1 5 10 15

Gly Trp Glu Ser Pro Gln Cys Arg Ser Ile Arg Ala Arg Leu Leu Leu  
 20 25 30

Pro Arg Gly Arg Ser Arg Pro Pro Asn Ala Asp Cys Cys Trp Asn Gln  
 35 40 45

Leu Ala Val Thr Pro Asp Thr Arg Met Pro Ala Ser Ser Ala Ala Gly  
 50 55 60

Arg Asp Ala Ala Ala Tyr Asp Ala Trp Tyr Asp Ser Pro Thr Gly Arg  
65 70 75 80

Pro Ile Leu Ala Thr Glu Val Ala Ala Leu Arg Pro Leu Ile Glu Val  
85 90 95

Phe Ala Gln Pro Arg Leu Glu Ile Gly Val Gly Thr Gly Arg Phe Ala  
100 105 110

Asp Leu Leu Gly Val Arg Phe Gly Leu Asp Pro Ser Arg Asp Ala Leu  
115 120 125

Met Phe Ala Arg Arg Arg Gly Val Leu Val Ala Asn Ala Val Gly Glu  
130 135 140

Ala Val Pro Phe Val Ser Arg His Phe Gly Ala Val Leu Met Ala Phe  
145 150 155 160

Thr Leu Cys Phe Val Thr Asp Pro Ala Ala Ile Phe Arg Glu Thr Arg  
165 170 175

Arg Leu Leu Ala Asp Gly Gly Gly Leu Val Ile Gly Phe Leu Pro Arg  
180 185 190

Gly Thr Pro Trp Ala Asp Leu Tyr Ala Leu Arg Ala Ala Arg Gly Gln  
195 200 205

Pro Gly Tyr Arg Asp Ala Arg Phe Tyr Thr Ala Ala Glu Leu Glu Gln  
210 215 220

Leu Leu Ala Asp Ser Gly Phe Arg Val Ile Ala Arg Arg Cys Thr Leu  
225 230 235 240

His Gln Pro Pro Gly Leu Ala Arg Tyr Asp Ile Glu Ala Ala His Asp  
245 250 255

Gly Ile Gln Ala Gly Ala Gly Phe Val Ala Ile Ser Ala Val Asp Gln  
260 265 270

Ala His Glu Pro Lys Asp Asp His Pro Leu Glu Ser Glu  
275 280 285

<210> 20  
<211> 114  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 20

Val Thr Tyr Val Ile Gly Ser Glu Cys Val Asp Val Met Asp Lys Ser  
1 5 10 15

Cys Val Gln Glu Cys Pro Val Asp Cys Ile Tyr Glu Gly Ala Arg Met  
20 25 30

Leu Tyr Ile Asn Pro Asp Glu Cys Val Asp Cys Gly Ala Cys Lys Pro  
35 40 45

Ala Cys Arg Val Glu Ala Ile Tyr Trp Glu Gly Asp Leu Pro Asp Asp  
50 55 60

Gln His Gln His Leu Gly Asp Asn Ala Ala Phe Phe His Gln Val Leu  
65 70 75 80

Pro Gly Arg Val Ala Pro Leu Gly Ser Pro Gly Gly Ala Ala Ala Val  
85 90 95

Gly Pro Ile Gly Val Asp Thr Pro Leu Val Ala Ala Ile Pro Val Glu  
100 105 110

Cys Pro

<210> 21

<211> 279

<212> PRT

<213> Mycobacterium tuberculosis

<400> 21

Met Asn Gln Ser His Lys Pro Pro Ser Ile Val Val Gly Ile Asp Gly  
1 5 10 15

Ser Lys Pro Ala Val Gln Ala Ala Leu Trp Ala Val Asp Glu Ala Ala  
20 25 30

Ser Arg Asp Ile Pro Leu Arg Leu Leu Tyr Ala Ile Glu Pro Asp Asp  
35 40 45

Pro Gly Tyr Ala Ala His Gly Ala Ala Ala Arg Lys Leu Ala Ala Ala  
50 55 60

Glu Asn Ala Val Arg Tyr Ala Phe Thr Ala Val Glu Ala Ala Asp Arg  
65 70 75 80

Pro Val Lys Val Glu Val Glu Ile Thr Gln Glu Arg Pro Val Thr Ser  
85 90 95

Leu Ile Arg Ala Ser Ala Ala Ala Ala Leu Val Cys Val Gly Ala Ile  
100 105 110

Gly Val His His Phe Arg Pro Glu Arg Val Gly Ser Thr Ala Ala Ala  
115 120 125

Leu Ala Leu Ser Ala Gln Cys Pro Val Ala Ile Val Arg Pro His Arg  
130 135 140

Val Pro Ile Gly Arg Asp Ala Ala Trp Ile Val Val Glu Ala Asp Gly  
145 150 155 160

Ser Ser Asp Ile Gly Val Leu Leu Gly Ala Val Met Ala Glu Ala Arg  
165 170 175

Leu Arg Asp Ser Pro Val Arg Val Val Thr Cys Arg Gln Ser Gly Val  
180 185 190

Gly Asp Thr Gly Asp Asp Val Arg Ala Ser Leu Asp Arg Trp Leu Ala  
195 200 205

Arg Trp Gln Pro Arg Tyr Pro Asp Val Arg Val Gln Ser Ala Ala Val  
210 215 220

His Gly Glu Leu Leu Asp Tyr Leu Ala Gly Leu Gly Arg Ser Val His  
225 230 235 240

Met Val Val Leu Ser Ala Ser Asp Gln Glu His Val Glu Gln Leu Val  
245 250 255

Gly Ala Pro Gly Asn Ala Val Leu Gln Glu Ala Gly Cys Thr Leu Leu  
260 265 270

Val Val Gly Gln Gln Tyr Leu  
275

<210> 22  
<211> 339  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 22

Met Thr Glu Pro Ala Ala Trp Asp Glu Gly Lys Pro Arg Ile Ile Thr  
1 5 10 15

Leu Thr Met Asn Pro Ala Leu Asp Ile Thr Thr Ser Val Asp Val Val  
 20 25 30

Arg Pro Thr Glu Lys Met Arg Cys Gly Ala Pro Arg Tyr Asp Pro Gly  
 35 40 45

Gly Gly Gly Ile Asn Val Ala Arg Ile Val His Val Leu Gly Gly Cys  
 50 55 60

Ser Thr Ala Leu Phe Pro Ala Gly Gly Ser Thr Gly Ser Leu Leu Met  
 65 70 75 80

Ala Leu Leu Gly Asp Ala Gly Val Pro Phe Arg Val Ile Pro Ile Ala  
 85 90 95

Ala Ser Thr Arg Glu Ser Phe Thr Val Asn Glu Ser Arg Thr Ala Lys  
 100 105 110

Gln Tyr Arg Phe Val Leu Pro Gly Pro Ser Leu Thr Val Ala Glu Gln  
 115 120 125

Glu Gln Cys Leu Asp Glu Leu Arg Gly Ala Ala Ala Ser Ala Ala Phe  
 130 135 140

Val Val Ala Ser Gly Ser Leu Pro Pro Gly Val Ala Ala Asp Tyr Tyr  
 145 150 155 160

Gln Arg Val Ala Asp Ile Cys Arg Arg Ser Ser Thr Pro Leu Ile Leu  
 165 170 175

Asp Thr Ser Gly Gly Gly Leu Gln His Ile Ser Ser Gly Val Phe Leu  
 180 185 190

Leu Lys Ala Ser Val Arg Glu Leu Arg Glu Cys Val Gly Ser Glu Leu  
 195 200 205

Leu Thr Glu Pro Glu Gln Leu Ala Ala Ala His Glu Leu Ile Asp Arg  
 210 215 220

Gly Arg Ala Glu Val Val Val Val Ser Leu Gly Ser Gln Gly Ala Leu  
 225 230 235 240

Leu Ala Thr Arg His Ala Ser His Arg Phe Ser Ser Ile Pro Met Thr  
 245 250 255

Ala Val Ser Gly Val Gly Ala Gly Asp Ala Met Val Ala Ala Ile Thr  
260 265 270

Val Gly Leu Ser Arg Gly Trp Ser Leu Ile Lys Ser Val Arg Leu Gly  
275 280 285

Asn Ala Ala Gly Ala Ala Met Leu Leu Thr Pro Gly Thr Ala Ala Cys  
290 295 300

Asn Arg Asp Asp Val Glu Arg Phe Phe Glu Leu Ala Ala Glu Pro Thr  
305 310 315 320

Glu Val Gly Gln Asp Gln Tyr Val Trp His Pro Ile Val Asn Pro Glu  
325 330 335

Ala Ser Pro

<210> 23  
<211> 681  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 23

Val Leu Met Thr Ala Ala Ala Asp Val Thr Arg Arg Ser Pro Arg Arg  
1 5 10 15

Val Phe Arg Asp Arg Arg Glu Ala Gly Arg Val Leu Ala Glu Leu Leu  
20 25 30

Ala Ala Tyr Arg Asp Gln Pro Asp Val Ile Val Leu Gly Leu Ala Arg  
35 40 45

Gly Gly Leu Pro Val Ala Trp Glu Val Ala Ala Ala Leu His Ala Pro  
50 55 60

Leu Asp Ala Phe Val Val Arg Lys Leu Gly Ala Pro Gly His Asp Glu  
65 70 75 80

Phe Ala Val Gly Ala Leu Ala Ser Gly Gly Arg Val Val Val Asn Asp  
85 90 95

Asp Val Val Arg Gly Leu Arg Ile Thr Pro Gln Gln Leu Arg Asp Ile  
100 105 110

Ala Glu Arg Glu Gly Arg Glu Leu Leu Arg Arg Glu Ser Ala Tyr Arg  
115 120 125



Gly Glu Arg Pro Pro Thr Asp Ile Thr Gly Lys Thr Val Ile Val Val  
 130 135 140

Asp Asp Gly Leu Ala Thr Gly Ala Ser Met Phe Ala Ala Val Gln Ala  
 145 150 155 160

Leu Arg Asp Ala Gln Pro Ala Gln Ile Val Ile Ala Val Pro Ala Ala  
 165 170 175

Pro Glu Ser Thr Cys Arg Glu Phe Ala Gly Leu Val Asp Asp Val Val  
 180 185 190

Cys Ala Thr Met Pro Thr Pro Phe Leu Ala Val Gly Glu Ser Phe Trp  
 195 200 205

Asp Phe Arg Gln Val Thr Asp Glu Glu Val Arg Arg Leu Leu Ala Thr  
 210 215 220

Pro Thr Ala Gly Pro Ser Leu Arg Arg Pro Ala Ala Ser Thr Ala Ala  
 225 230 235 240

Asp Val Leu Arg Arg Val Ala Ile Asp Ala Pro Gly Gly Val Pro Thr  
 245 250 255

His Glu Val Leu Ala Glu Leu Val Gly Asp Ala Arg Ile Val Leu Ile  
 260 265 270

Gly Glu Ser Ser His Gly Thr His Glu Phe Tyr Gln Ala Arg Ala Ala  
 275 280 285

Met Thr Gln Trp Leu Ile Glu Glu Lys Gly Phe Gly Ala Val Ala Ala  
 290 295 300

Glu Ala Asp Trp Pro Asp Ala Tyr Arg Val Asn Arg Tyr Val Arg Gly  
 305 310 315 320

Leu Gly Glu Asp Thr Asn Ala Asp Glu Ala Leu Ser Gly Phe Glu Arg  
 325 330 335

Phe Pro Ala Trp Met Trp Arg Asn Thr Val Val Arg Asp Phe Val Glu  
 340 345 350

Trp Leu Arg Thr Arg Asn Gln Arg Tyr Glu Ser Gly Ala Leu Arg Gln  
 355 360 365

Ala Gly Phe Tyr Gly Leu Asp Leu Tyr Ser Leu His Arg Ser Ile Gln  
 370 375 380

Glu Val Ile Ser Tyr Leu Asp Lys Val Asp Pro Arg Ala Ala Ala Arg  
 385 390 395 400

Ala Arg Ala Arg Tyr Ala Cys Phe Asp His Ala Cys Ala Asp Asp Gly  
 405 410 415

Gln Ala Tyr Gly Phe Ala Ala Ala Phe Gly Ala Gly Pro Ser Cys Glu  
 420 425 430

Arg Glu Ala Val Glu Gln Leu Val Asp Val Gln Arg Asn Ala Leu Ala  
 435 440 445

Tyr Ala Arg Gln Asp Gly Leu Leu Ala Glu Asp Glu Leu Phe Tyr Ala  
 450 455 460

Gln Gln Asn Ala Gln Thr Val Arg Asp Ala Glu Val Tyr Tyr Arg Ala  
 465 470 475 480

Met Phe Ser Gly Arg Val Thr Ser Trp Asn Leu Arg Asp Gln His Met  
 485 490 495

Ala Gln Thr Leu Gly Ser Leu Leu Thr His Leu Asp Arg His Leu Asp  
 500 505 510

Ala Pro Pro Ala Arg Ile Val Val Trp Ala His Asn Ser His Val Gly  
 515 520 525

Asp Ala Arg Ala Thr Glu Val Trp Ala Asp Gly Gln Leu Thr Leu Gly  
 530 535 540

Gln Ile Val Arg Glu Arg Tyr Gly Asp Glu Ser Arg Ser Ile Gly Phe  
 545 550 555 560

Ser Thr Tyr Thr Gly Thr Val Thr Ala Ala Ser Glu Trp Gly Gly Ile  
 565 570 575

Ala Gln Arg Lys Ala Val Arg Pro Ala Leu His Gly Ser Val Glu Glu  
 580 585 590

Leu Phe His Gln Thr Ala Asp Ser Phe Leu Val Ser Ala Arg Leu Ser  
 595 600 605

Arg Asp Ala Glu Ala Pro Leu Asp Val Val Arg Leu Gly Arg Ala Ile  
610 615 620

Gly Val Val Tyr Leu Pro Ala Thr Glu Arg Gln Ser His Tyr Leu His  
625 630 635 640

Val Arg Pro Ala Asp Gln Phe Asp Ala Met Ile His Ile Asp Gln Thr  
645 650 655

Arg Ala Leu Glu Pro Leu Glu Val Thr Ser Arg Trp Ile Ala Gly Glu  
660 665 670

Asn Pro Glu Thr Tyr Pro Thr Gly Leu  
675 680

<210> 24  
<211> 144  
<212> PRT  
<213> Mycobacterium tuberculosis  
<400> 24

Met Ala Thr Thr Leu Pro Val Gln Arg His Pro Arg Ser Leu Phe Pro  
1 5 10 15

Glu Phe Ser Glu Leu Phe Ala Ala Phe Pro Ser Phe Ala Gly Leu Arg  
20 25 30

Pro Thr Phe Asp Thr Arg Leu Met Arg Leu Glu Asp Glu Met Lys Glu  
35 40 45

Gly Arg Tyr Glu Val Arg Ala Glu Leu Pro Gly Val Asp Pro Asp Lys  
50 55 60

Asp Val Asp Ile Met Val Arg Asp Gly Gln Leu Thr Ile Lys Ala Glu  
65 70 75 80

Arg Thr Glu Gln Lys Asp Phe Asp Gly Arg Ser Glu Phe Ala Tyr Gly  
85 90 95

Ser Phe Val Arg Thr Val Ser Leu Pro Val Gly Ala Asp Glu Asp Asp  
100 105 110

Ile Lys Ala Thr Tyr Asp Lys Gly Ile Leu Thr Val Ser Val Ala Val  
115 120 125

Ser Glu Gly Lys Pro Thr Glu Lys His Ile Gln Ile Arg Ser Thr Asn  
130 135 140

<210> 25  
 <211> 331  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 25

Met Pro Asp Thr Met Val Thr Thr Asp Val Ile Lys Ser Ala Val Gln  
 1 5 10 15

Leu Ala Cys Arg Ala Pro Ser Leu His Asn Ser Gln Pro Trp Arg Trp  
 20 25 30

Ile Ala Glu Asp His Thr Val Ala Leu Phe Leu Asp Lys Asp Arg Val  
 35 40 45

Leu Tyr Ala Thr Asp His Ser Gly Arg Glu Ala Leu Leu Gly Cys Gly  
 50 55 60

Ala Val Leu Asp His Phe Arg Val Ala Met Ala Ala Ala Gly Thr Thr  
 65 70 75 80

Ala Asn Val Glu Arg Phe Pro Asn Pro Asn Asp Pro Leu His Leu Ala  
 85 90 95

Ser Ile Asp Phe Ser Pro Ala Asp Phe Val Thr Glu Gly His Arg Leu  
 100 105 110

Arg Ala Asp Ala Ile Leu Leu Arg Arg Thr Asp Arg Leu Pro Phe Ala  
 115 120 125

Glu Pro Pro Asp Trp Asp Leu Val Glu Ser Gln Leu Arg Thr Thr Val  
 130 135 140

Thr Ala Asp Thr Val Arg Ile Asp Val Ile Ala Asp Asp Met Arg Pro  
 145 150 155 160

Glu Leu Ala Ala Ala Ser Lys Leu Thr Glu Ser Leu Arg Leu Tyr Asp  
 165 170 175

Ser Ser Tyr His Ala Glu Leu Phe Trp Trp Thr Gly Ala Phe Glu Thr  
 180 185 190

Ser Glu Gly Ile Pro His Ser Ser Leu Val Ser Ala Ala Glu Ser Asp  
 195 200 205

Arg Val Thr Phe Gly Arg Asp Phe Pro Val Val Ala Asn Thr Asp Arg  
 210 215 220

Arg Pro Glu Phe Gly His Asp Arg Ser Lys Val Leu Val Leu Ser Thr  
 225 230 235 240

Tyr Asp Asn Glu Arg Ala Ser Leu Leu Arg Cys Gly Glu Met Leu Ser  
 245 250 255

Ala Val Leu Leu Asp Ala Thr Met Ala Gly Leu Ala Thr Cys Thr Leu  
 260 265 270

Thr His Ile Thr Glu Leu His Ala Ser Arg Asp Leu Val Ala Ala Leu  
 275 280 285

Ile Gly Gln Pro Ala Thr Pro Gln Ala Leu Val Arg Val Gly Leu Ala  
 290 295 300

Pro Glu Met Glu Glu Pro Pro Pro Ala Thr Pro Arg Arg Pro Ile Asp  
 305 310 315 320

Glu Val Phe His Val Arg Ala Lys Asp His Arg  
 325 330

<210> 26  
 <211> 195  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 26

Met Pro Leu Leu Thr Ile Gly Asp Gln Phe Pro Ala Tyr Gln Leu Thr  
 1 5 10 15

Ala Leu Ile Gly Gly Asp Leu Ser Lys Val Asp Ala Lys Gln Pro Gly  
 20 25 30

Asp Tyr Phe Thr Thr Ile Thr Ser Asp Glu His Pro Gly Lys Trp Arg  
 35 40 45

Val Val Phe Phe Trp Pro Lys Asp Phe Thr Phe Val Cys Pro Thr Glu  
 50 55 60

Ile Ala Ala Phe Ser Lys Leu Asn Asp Glu Phe Glu Asp Arg Asp Ala  
 65 70 75 80

Gln Ile Leu Gly Val Ser Ile Asp Ser Glu Phe Ala His Phe Gln Trp  
 85 90 95

Arg Ala Gln His Asn Asp Leu Lys Thr Leu Pro Phe Pro Met Leu Ser  
100 105 110

Asp Ile Lys Arg Glu Leu Ser Gln Ala Ala Gly Val Leu Asn Ala Asp  
115 120 125

Gly Val Ala Asp Arg Val Thr Phe Ile Val Asp Pro Asn Asn Glu Ile  
130 135 140

Gln Phe Val Ser Ala Thr Ala Gly Ser Val Gly Arg Asn Val Asp Glu  
145 150 155 160

Val Leu Arg Val Leu Asp Ala Leu Gln Ser Asp Glu Leu Cys Ala Cys  
165 170 175

Asn Trp Arg Lys Gly Asp Pro Thr Leu Asp Ala Gly Glu Leu Leu Lys  
180 185 190

Ala Ser Ala  
195

<210> 27  
<211> 272  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 27

Met Ser Gly Arg Gly Glu Pro Thr Met Lys Thr Ile Ile Val Gly Ile  
1 5 10 15

Asp Gly Ser His Ala Ala Ile Thr Ala Ala Leu Trp Gly Val Asp Glu  
20 25 30

Ala Ile Ser Arg Ala Val Pro Leu Arg Leu Val Ser Val Ile Lys Pro  
35 40 45

Thr His Pro Ser Pro Asp Asp Tyr Asp Arg Asp Leu Ala His Ala Glu  
50 55 60

Arg Ser Leu Arg Glu Ala Gln Ser Ala Val Glu Ala Ala Gly Lys Leu  
65 70 75 80

Val Lys Ile Glu Thr Asp Ile Pro Arg Gly Pro Ala Gly Pro Val Leu  
85 90 95

Val Glu Ala Ser Arg Asp Ala Glu Met Ile Cys Val Gly Ser Val Gly  
100 105 110

Ile Gly Arg Tyr Ala Ser Ser Ile Leu Gly Ser Thr Ala Thr Glu Leu  
115 120 125

Ala Glu Lys Ala His Cys Pro Val Ala Val Met Arg Ser Lys Val Asp  
130 135 140

Gln Pro Ala Ser Asp Ile Asn Trp Ile Val Val Arg Met Thr Asp Ala  
145 150 155 160

Pro Asp Asn Glu Ala Val Leu Glu Tyr Ala Ala Arg Glu Ala Lys Leu  
165 170 175

Arg Gln Ala Pro Ile Leu Ala Leu Gly Gly Arg Pro Glu Glu Leu Arg  
180 185 190

Glu Ile Pro Asp Gly Glu Phe Glu Arg Arg Val Gln Asp Trp His His  
195 200 205

Arg His Pro Asp Val Arg Val Tyr Pro Ile Thr Thr His Thr Gly Ile  
210 215 220

Ala Arg Phe Leu Ala Asp His Asp Glu Arg Val Gln Leu Ala Val Ile  
225 230 235 240

Gly Gly Gly Glu Ala Gly Gln Leu Ala Arg Leu Val Gly Pro Ser Gly  
245 250 255

His Pro Val Phe Arg His Ala Glu Cys Ser Val Leu Val Val Arg Arg  
260 265 270

<210> 28  
<211> 393  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 28

Met Arg Asp Ala Ile Pro Leu Gly Arg Ile Ala Gly Phe Val Val Asn  
1 5 10 15

Val His Trp Ser Val Leu Val Ile Leu Trp Leu Phe Thr Trp Ser Leu  
20 25 30

Ala Thr Met Leu Pro Gly Thr Val Gly Gly Tyr Pro Ala Val Val Tyr  
35 40 45

Trp Leu Leu Gly Ala Gly Gly Ala Val Met Leu Leu Ala Ser Leu Leu  
 50 55 60

Ala His Glu Leu Ala His Ala Val Val Ala Arg Arg Ala Gly Val Ser  
 65 70 75 80

Val Glu Ser Val Thr Leu Trp Leu Phe Gly Gly Val Thr Ala Leu Gly  
 85 90 95

Gly Glu Ala Lys Thr Pro Lys Ala Ala Phe Arg Ile Ala Phe Ala Gly  
 100 105 110

Pro Ala Thr Ser Leu Ala Leu Ser Ala Thr Phe Gly Ala Leu Ala Ile  
 115 120 125

Thr Leu Ala Gly Val Arg Thr Pro Ala Ile Val Ile Ser Val Ala Trp  
 130 135 140

Trp Leu Ala Thr Val Asn Leu Leu Leu Gly Leu Phe Asn Leu Leu Pro  
 145 150 155 160

Gly Ala Pro Leu Asp Gly Gly Arg Leu Val Arg Ala Tyr Leu Trp Arg  
 165 170 175

Arg His Gly Asp Ser Val Arg Ala Gly Ile Gly Ala Ala Arg Ala Gly  
 180 185 190

Arg Val Val Ala Leu Val Leu Ile Ala Leu Gly Leu Ala Glu Phe Val  
 195 200 205

Ala Gly Gly Leu Val Gly Gly Val Trp Leu Ala Phe Ile Gly Trp Phe  
 210 215 220

Ile Phe Ala Ala Ala Arg Glu Glu Glu Thr Arg Ile Ser Thr Gln Gln  
 225 230 235 240

Leu Phe Ala Gly Val Arg Val Ala Asp Ala Met Thr Ala Gln Pro His  
 245 250 255

Thr Ala Pro Gly Trp Ile Asn Val Glu Asp Phe Ile Gln Arg Tyr Val  
 260 265 270

Leu Gly Glu Arg His Ser Ala Tyr Pro Val Ala Asp Arg Asp Gly Ser  
 275 280 285



Ile Thr Gly Leu Val Ala Leu Arg Gln Leu Arg Asp Val Ala Pro Ser  
 290 295 300

Arg Arg Ser Thr Thr Ser Val Gly Asp Ile Ala Leu Pro Leu His Ser  
 305 310 315 320

Val Pro Thr Ala Arg Pro Gln Glu Pro Leu Thr Ala Leu Leu Glu Arg  
 325 330 335

Met Ala Pro Leu Gly Pro Arg Ser Arg Ala Leu Val Thr Glu Gly Ser  
 340 345 350

Ala Val Val Gly Ile Val Thr Pro Ser Asp Val Ala Arg Leu Ile Asp  
 355 360 365

Val Tyr Arg Leu Ala Gln Pro Glu Pro Thr Phe Thr Thr Ser Pro Gln  
 370 375 380

Asp Ala Asp Arg Phe Ser Asp Ala Gly  
 385 390

<210> 29

<211> 413

<212> PRT

<213> Mycobacterium tuberculosis

<400> 29

Met Ala Ser Ser Ala Ser Asp Gly Thr His Glu Arg Ser Ala Phe Arg  
 1 5 10 15

Leu Ser Pro Pro Val Leu Ser Gly Ala Met Gly Pro Phe Met His Thr  
 20 25 30

Gly Leu Tyr Val Ala Gln Ser Trp Arg Asp Tyr Leu Gly Gln Gln Pro  
 35 40 45

Asp Lys Leu Pro Ile Ala Arg Pro Thr Ile Ala Leu Ala Ala Gln Ala  
 50 55 60

Phe Arg Asp Glu Ile Val Leu Leu Gly Leu Lys Ala Arg Arg Pro Val  
 65 70 75 80

Ser Asn His Arg Val Phe Glu Arg Ile Ser Gln Glu Val Ala Ala Gly  
 85 90 95

Leu Glu Phe Tyr Gly Asn Arg Arg Trp Leu Glu Lys Pro Ser Gly Phe  
 100 105 110

Phe	Ala	Gln	Pro	Pro	Pro	Leu	Thr	Glu	Val	Ala	Val	Arg	Lys	Val	Lys	115	120	125
Asp	Arg	Arg	Arg	Ser	Phe	Tyr	Arg	Ile	Phe	Phe	Asp	Ser	Gly	Phe	Thr	130	135	140
Pro	His	Pro	Gly	Glu	Pro	Gly	Ser	Gln	Arg	Trp	Leu	Ser	Tyr	Thr	Ala	145	150	155
Asn	Asn	Arg	Glu	Tyr	Ala	Leu	Leu	Leu	Arg	His	Pro	Glu	Pro	Arg	Pro	165	170	175
Trp	Leu	Val	Cys	Val	His	Gly	Thr	Glu	Met	Gly	Arg	Ala	Pro	Leu	Asp	180	185	190
Leu	Ala	Val	Phe	Arg	Ala	Trp	Lys	Leu	His	Asp	Glu	Leu	Gly	Leu	Asn	195	200	205
Ile	Val	Met	Pro	Val	Leu	Pro	Met	His	Gly	Pro	Arg	Gly	Gln	Gly	Leu	210	215	220
Pro	Lys	Gly	Ala	Val	Phe	Pro	Gly	Glu	Asp	Val	Leu	Asp	Asp	Val	His	225	230	235
Gly	Thr	Ala	Gln	Ala	Val	Trp	Asp	Ile	Arg	Arg	Leu	Leu	Ser	Trp	Ile	245	250	255
Arg	Ser	Gln	Glu	Glu	Glu	Ser	Leu	Ile	Gly	Leu	Asn	Gly	Leu	Ser	Leu	260	265	270
Gly	Gly	Tyr	Ile	Ala	Ser	Leu	Val	Ala	Ser	Leu	Glu	Glu	Gly	Leu	Ala	275	280	285
Cys	Ala	Ile	Leu	Gly	Val	Pro	Val	Ala	Asp	Leu	Ile	Glu	Leu	Leu	Gly	290	295	300
Arg	His	Cys	Gly	Leu	Arg	His	Lys	Asp	Pro	Arg	Arg	His	Thr	Val	Lys	305	310	315
Met	Ala	Glu	Pro	Ile	Gly	Arg	Met	Ile	Ser	Pro	Leu	Ser	Leu	Thr	Pro	325	330	335
Leu	Val	Pro	Met	Pro	Gly	Arg	Phe	Ile	Tyr	Ala	Gly	Ile	Ala	Asp	Arg	340	345	350

Leu Val His Pro Arg Glu Gln Val Thr Arg Leu Trp Glu His Trp Gly  
 355 360 365

Lys Pro Glu Ile Val Trp Tyr Pro Gly Gly His Thr Gly Phe Phe Gln  
 370 375 380

Ser Arg Pro Val Arg Arg Phe Val Gln Ala Ala Leu Glu Gln Ser Gly  
 385 390 395 400

Leu Leu Asp Ala Pro Arg Thr Gln Arg Asp Arg Ser Ala  
 405 410

<210> 30  
 <211> 120  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 30

Met Ser Thr Gln Arg Pro Arg His Ser Gly Ile Arg Ala Val Gly Pro  
 1 5 10 15

Tyr Ala Trp Ala Gly Arg Cys Gly Arg Ile Gly Arg Trp Gly Val His  
 20 25 30

Gln Glu Ala Met Met Asn Leu Ala Ile Trp His Pro Arg Lys Val Gln  
 35 40 45

Ser Ala Thr Ile Tyr Gln Val Thr Asp Arg Ser His Asp Gly Arg Thr  
 50 55 60

Ala Arg Val Pro Gly Asp Glu Ile Thr Ser Thr Val Ser Gly Trp Leu  
 65 70 75 80

Ser Glu Leu Gly Thr Gln Ser Pro Leu Ala Asp Glu Leu Ala Arg Ala  
 85 90 95

Val Arg Ile Gly Asp Trp Pro Ala Ala Tyr Ala Ile Gly Glu His Leu  
 100 105 110

Ser Val Glu Ile Ala Val Ala Val  
 115 120

<210> 31  
 <211> 374  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 31

Met Arg Ser Glu Arg Leu Arg Trp Leu Val Ala Ala Glu Gly Pro Phe  
1 5 10 15

Ala Ser Val Tyr Phe Asp Asp Ser His Asp Thr Leu Asp Ala Val Glu  
20 25 30

Arg Arg Glu Ala Thr Trp Arg Asp Val Arg Lys His Leu Glu Ser Arg  
35 40 45

Asp Ala Lys Gln Glu Leu Ile Asp Ser Leu Glu Glu Ala Val Arg Asp  
50 55 60

Ser Arg Pro Ala Val Gly Gln Arg Gly Arg Ala Leu Ile Ala Thr Gly  
65 70 75 80

Glu Gln Val Leu Val Asn Glu His Leu Ile Gly Pro Pro Pro Ala Thr  
85 90 95

Val Ile Arg Leu Ser Asp Tyr Pro Tyr Val Val Pro Leu Ile Asp Leu  
100 105 110

Glu Met Arg Arg Pro Thr Tyr Val Phe Ala Ala Val Asp His Thr Gly  
115 120 125

Ala Asp Val Lys Leu Tyr Gln Gly Ala Thr Ile Ser Ser Thr Lys Ile  
130 135 140

Asp Gly Val Gly Tyr Pro Val His Lys Pro Val Thr Ala Gly Trp Asn  
145 150 155 160

Gly Tyr Gly Asp Phe Gln His Thr Thr Glu Glu Ala Ile Arg Met Asn  
165 170 175

Cys Arg Ala Val Ala Asp His Leu Thr Arg Leu Val Asp Ala Ala Asp  
180 185 190

Pro Glu Val Val Phe Val Ser Gly Glu Val Arg Ser Arg Thr Asp Leu  
195 200 205

Leu Ser Thr Leu Pro Gln Arg Val Ala Val Arg Val Ser Gln Leu His  
210 215 220

Ala Gly Pro Arg Lys Ser Ala Leu Asp Glu Glu Glu Ile Trp Asp Leu  
225 230 235 240

Thr Ser Ala Glu Phe Thr Arg Arg Arg Tyr Ala Glu Ile Thr Asn Val  
245 250 255

Ala Gln Gln Phe Glu Ala Glu Ile Gly Arg Gly Ser Gly Leu Ala Ala  
260 265 270

Gln Gly Leu Ala Glu Val Cys Ala Ala Leu Arg Asp Gly Asp Val Asp  
275 280 285

Thr Leu Ile Val Gly Glu Leu Gly Glu Ala Thr Val Val Thr Gly Lys  
290 295 300

Ala Arg Thr Thr Val Ala Arg Asp Ala Asp Met Leu Ser Glu Leu Gly  
305 310 315 320

Glu Pro Val Asp Arg Val Ala Arg Ala Asp Glu Ala Leu Pro Phe Ala  
325 330 335

Ala Ile Ala Val Gly Ala Ala Leu Val Arg Asp Asp Asn Arg Ile Ala  
340 345 350

Pro Leu Asp Gly Val Gly Ala Leu Leu Arg Tyr Ala Ala Thr Asn Arg  
355 360 365

Leu Gly Ser His Arg Ser  
370

<210> 32  
<211> 179  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 32

Met Leu His Arg Asp Asp His Ile Asn Pro Pro Arg Pro Arg Gly Leu  
1 5 10 15

Asp Val Pro Cys Ala Arg Leu Arg Ala Thr Asn Pro Leu Arg Ala Leu  
20 25 30

Ala Arg Cys Val Gln Ala Gly Lys Pro Gly Thr Ser Ser Gly His Arg  
35 40 45

Ser Val Pro His Thr Ala Asp Leu Arg Ile Glu Ala Trp Ala Pro Thr  
50 55 60

Arg Asp Gly Cys Ile Arg Gln Ala Val Leu Gly Thr Val Glu Ser Phe  
65 70 75 80

Leu Asp Leu Glu Ser Ala His Ala Val His Thr Arg Leu Arg Arg Leu  
85 90 95

Thr Ala Asp Arg Asp Asp Asp Leu Leu Val Ala Val Leu Glu Glu Val  
100 105 110

Ile Tyr Leu Leu Asp Thr Val Gly Glu Thr Pro Val Asp Leu Arg Leu  
115 120 125

Arg Asp Val Asp Gly Gly Val Asp Val Thr Phe Ala Thr Thr Asp Ala  
130 135 140

Ser Thr Leu Val Gln Val Gly Ala Val Pro Lys Ala Val Ser Leu Asn  
145 150 155 160

Glu Leu Arg Phe Ser Gln Gly Arg His Gly Trp Arg Cys Ala Val Thr  
165 170 175

Leu Asp Val

<210> 33  
<211> 375  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 33

Val Thr Gln Thr Gly Lys Arg Gln Arg Arg Lys Phe Gly Arg Ile Arg  
1 5 10 15

Gln Phe Asn Ser Gly Arg Trp Gln Ala Ser Tyr Thr Gly Pro Asp Gly  
20 25 30

Arg Val Tyr Ile Ala Pro Lys Thr Phe Asn Ala Lys Ile Asp Ala Glu  
35 40 45

Ala Trp Leu Thr Asp Arg Arg Arg Glu Ile Asp Arg Gln Leu Trp Ser  
50 55 60

Pro Ala Ser Gly Gln Glu Asp Arg Pro Gly Ala Pro Phe Gly Glu Tyr  
65 70 75 80

Ala Glu Gly Trp Leu Lys Gln Arg Gly Ile Lys Asp Arg Thr Arg Ala  
85 90 95

His Tyr Arg Lys Leu Leu Asp Asn His Ile Leu Ala Thr Phe Ala Asp  
 100 105 110

Thr Asp Leu Arg Asp Ile Thr Pro Ala Ala Val Arg Arg Trp Tyr Ala  
 115 120 125

Thr Thr Ala Val Gly Thr Pro Thr Met Arg Ala His Ser Tyr Ser Leu  
 130 135 140

Leu Arg Ala Ile Met Gln Thr Ala Leu Ala Asp Asp Leu Ile Asp Ser  
 145 150 155 160

Asn Pro Cys Arg Ile Ser Gly Ala Ser Thr Ala Arg Arg Val His Lys  
 165 170 175

Ile Arg Pro Ala Thr Leu Asp Glu Leu Glu Thr Ile Thr Lys Ala Met  
 180 185 190

Pro Asp Pro Tyr Gln Ala Phe Val Leu Met Ala Ala Trp Leu Ala Met  
 195 200 205

Arg Tyr Gly Glu Leu Thr Glu Leu Arg Arg Lys Asp Ile Asp Leu His  
 210 215 220

Gly Glu Val Ala Arg Val Arg Arg Ala Val Val Arg Val Gly Glu Gly  
 225 230 235 240

Phe Lys Val Thr Thr Pro Lys Ser Asp Ala Gly Val Arg Asp Ile Ser  
 245 250 255

Ile Pro Pro His Leu Ile Pro Ala Ile Glu Asp His Leu His Lys His  
 260 265 270

Val Asn Pro Gly Arg Glu Ser Leu Leu Phe Pro Ser Val Asn Asp Pro  
 275 280 285

Asn Arg His Leu Ala Pro Ser Ala Leu Tyr Arg Met Phe Tyr Lys Ala  
 290 295 300

Arg Lys Ala Ala Gly Arg Pro Asp Leu Arg Val His Asp Leu Arg His  
 305 310 315 320

Ser Gly Ala Val Leu Ala Ala Ser Thr Gly Ala Thr Leu Ala Glu Leu  
 325 330 335

Met Gln Arg Leu Gly His Ser Thr Ala Gly Ala Ala Leu Arg Tyr Gln  
340 345 350

His Ala Ala Lys Gly Arg Asp Arg Glu Ile Ala Ala Leu Leu Ser Lys  
355 360 365

Leu Ala Glu Asn Gln Glu Met  
370 375

<210> 34  
<211> 371  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 34

Met Arg Val Gly Ile Pro Thr Glu Thr Lys Asn Asn Glu Phe Arg Val  
1 5 10 15

Ala Ile Thr Pro Ala Gly Val Ala Glu Leu Thr Arg Arg Gly His Glu  
20 25 30

Val Leu Ile Gln Ala Gly Ala Gly Glu Gly Ser Ala Ile Thr Asp Ala  
35 40 45

Asp Phe Lys Ala Ala Gly Ala Gln Leu Val Gly Thr Ala Asp Gln Val  
50 55 60

Trp Ala Asp Ala Asp Leu Leu Leu Lys Val Lys Glu Pro Ile Ala Ala  
65 70 75 80

Glu Tyr Gly Arg Leu Arg His Gly Gln Ile Leu Phe Thr Phe Leu His  
85 90 95

Leu Ala Ala Ser Arg Ala Cys Thr Asp Ala Leu Leu Asp Ser Gly Thr  
100 105 110

Thr Ser Ile Ala Tyr Glu Thr Val Gln Thr Ala Asp Gly Ala Leu Pro  
115 120 125

Leu Leu Ala Pro Met Ser Glu Val Ala Gly Arg Leu Ala Ala Gln Val  
130 135 140

Gly Ala Tyr His Leu Met Arg Thr Gln Gly Gly Arg Gly Val Leu Met  
145 150 155 160

Gly Gly Val Pro Gly Val Glu Pro Ala Asp Val Val Val Ile Gly Ala  
165 170 175



Gly Thr Ala Gly Tyr Asn Ala Ala Arg Ile Ala Asn Gly Met Gly Ala  
180 185 190

Thr Val Thr Val Leu Asp Ile Asn Ile Asp Lys Leu Arg Gln Leu Asp  
195 200 205

Ala Glu Phe Cys Gly Arg Ile His Thr Arg Tyr Ser Ser Ala Tyr Glu  
210 215 220

Leu Glu Gly Ala Val Lys Arg Ala Asp Leu Val Ile Gly Ala Val Leu  
225 230 235 240

Val Pro Gly Ala Lys Ala Pro Lys Leu Val Ser Asn Ser Leu Val Ala  
245 250 255

His Met Lys Pro Gly Ala Val Leu Val Asp Ile Ala Ile Asp Gln Gly  
260 265 270

Gly Cys Phe Glu Gly Ser Arg Pro Thr Thr Tyr Asp His Pro Thr Phe  
275 280 285

Ala Val His Asp Thr Leu Phe Tyr Cys Val Ala Asn Met Pro Ala Ser  
290 295 300

Val Pro Lys Thr Ser Thr Tyr Ala Leu Thr Asn Ala Thr Met Pro Tyr  
305 310 315 320

Val Leu Glu Leu Ala Asp His Gly Trp Arg Ala Ala Cys Arg Ser Asn  
325 330 335

Pro Ala Leu Ala Lys Gly Leu Ser Thr His Glu Gly Ala Leu Leu Ser  
340 345 350

Glu Arg Val Ala Thr Asp Leu Gly Val Pro Phe Thr Glu Pro Ala Ser  
355 360 365

Val Leu Ala  
370

<210> 35  
<211> 104  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 35

Met Val Ile Arg Phe Asp Gln Ile Gly Ser Leu Val Leu Ser Met Lys  
1 5 10 15

Ser Leu Ala Ser Leu Ser Phe Gln Arg Cys Leu Arg Glu Asn Ser Ser  
20 25 30

Leu Val Ala Ala Leu Asp Arg Leu Asp Ala Ala Val Asp Glu Leu Ser  
35 40 45

Ala Leu Ser Phe Asp Ala Leu Thr Thr Pro Glu Arg Asp Arg Ala Arg  
50 55 60

Arg Asp Arg Asp His His Pro Trp Ser Arg Ser Arg Ser Gln Leu Ser  
65 70 75 80

Pro Arg Met Ala His Gly Ala Val His Gln Cys Gln Trp Pro Lys Ala  
85 90 95

Val Trp Ala Val Ile Asp Asn Pro  
100

<210> 36

<211> 344

<212> PRT

<213> Mycobacterium tuberculosis

<400> 36

Val Leu Lys Asn Ala Val Leu Leu Ala Cys Arg Ala Pro Ser Val His  
1 5 10 15

Asn Ser Gln Pro Trp Arg Trp Val Ala Glu Ser Gly Ser Glu His Thr  
20 25 30

Thr Val His Leu Phe Val Asn Arg His Arg Thr Val Pro Ala Thr Asp  
35 40 45

His Ser Gly Arg Gln Ala Ile Ile Ser Cys Gly Ala Val Leu Asp His  
50 55 60

Leu Arg Ile Ala Met Thr Ala Ala His Trp Gln Ala Asn Ile Thr Arg  
65 70 75 80

Phe Pro Gln Pro Asn Gln Pro Asp Gln Leu Ala Thr Val Glu Phe Ser  
85 90 95

Pro Ile Asp His Val Thr Ala Gly Gln Arg Asn Arg Ala Gln Ala Ile  
 100 105 110

Leu Gln Arg Arg Thr Asp Arg Leu Pro Phe Asp Ser Pro Met Tyr Trp  
 115 120 125

His Leu Phe Glu Pro Ala Leu Arg Asp Ala Val Asp Lys Asp Val Ala  
 130 135 140

Met Leu Asp Val Val Ser Asp Asp Gln Arg Thr Arg Leu Val Val Ala  
 145 150 155 160

Ser Gln Leu Ser Glu Val Leu Arg Arg Asp Asp Pro Tyr Tyr His Ala  
 165 170 175

Glu Leu Glu Trp Trp Thr Ser Pro Phe Val Leu Ala His Gly Val Pro  
 180 185 190

Pro Asp Thr Leu Ala Ser Asp Ala Glu Arg Leu Arg Val Asp Leu Gly  
 195 200 205

Arg Asp Phe Pro Val Arg Ser Tyr Gln Asn Arg Arg Ala Glu Leu Ala  
 210 215 220

Asp Asp Arg Ser Lys Val Leu Val Leu Ser Thr Pro Ser Asp Thr Arg  
 225 230 235 240

Ala Asp Ala Leu Arg Cys Gly Glu Val Leu Ser Thr Ile Leu Leu Glu  
 245 250 255

Cys Thr Met Ala Gly Met Ala Thr Cys Thr Leu Thr His Leu Ile Glu  
 260 265 270

Ser Ser Asp Ser Arg Asp Ile Val Arg Gly Leu Thr Arg Gln Arg Gly  
 275 280 285

Glu Pro Gln Ala Leu Ile Arg Val Gly Ile Ala Pro Pro Leu Ala Ala  
 290 295 300

Val Pro Ala Pro Thr Pro Arg Arg Pro Leu Asp Ser Val Leu Gln Ile  
 305 310 315 320

Arg Gln Thr Pro Glu Lys Gly Arg Asn Ala Ser Asp Arg Asn Ala Arg  
 325 330 335

Glu Thr Gly Trp Phe Ser Pro Pro  
340

<210> 37  
<211> 336  
<212> PRT  
<213> Mycobacterium tuberculosis  
  
<400> 37

Val Trp Ser Ala Ser Gly Gly Gln Cys Gly Lys Tyr Leu Ala Ala Ser  
1 5 10 15

Met Val Leu Gln Leu Asp Gly Leu Glu Arg His Gly Val Leu Glu Phe  
20 25 30

Gly Arg Asp Arg Tyr Gly Pro Glu Val Arg Glu Glu Leu Leu Ala Met  
35 40 45

Ser Ala Ala Ser Ile Asp Arg Tyr Leu Lys Thr Ala Lys Ala Lys Asp  
50 55 60

Gln Ile Ser Gly Val Ser Thr Thr Lys Pro Ser Pro Leu Leu Arg Asn  
65 70 75 80

Ser Ile Lys Val Arg Arg Ala Gly Asp Glu Val Glu Ala Glu Pro Gly  
85 90 95

Phe Phe Glu Gly Asp Thr Val Ala His Cys Gly Pro Thr Leu Lys Gly  
100 105 110

Glu Phe Ala His Thr Leu Asn Leu Thr Asp Val His Ile Gly Trp Val  
115 120 125

Phe Thr Arg Thr Val Arg Asn Asn Ala Arg Thr His Ile Leu Ala Gly  
130 135 140

Leu Lys Ala Ser Val Thr Glu Ile Pro His Gly Ile Thr Gly Leu Asp  
145 150 155 160

Phe Asp Asn Gly Thr Val Phe Leu Asn Lys Pro Val Ile Ser Trp Ala  
165 170 175

Gly Asp Asn Gly Ile Tyr Phe Thr Arg Phe Arg Pro Tyr Lys Lys Asn  
180 185 190

His Ala Thr Ile Glu Ser Lys Asn Asn His Leu Val Arg Lys Tyr Ala  
195 200 205

Phe Tyr Tyr Arg Tyr Asp Thr Ala Glu Glu Arg Ala Val Leu Asn Arg  
 210 215 220

Met Trp Lys Leu Val Asn Asp Arg Leu Asn Tyr Leu Thr Pro Thr Ile  
 225 230 235 240

Lys Pro Ile Gly Tyr Ala Ser Ser Ala Asp Gly Arg Arg Arg Arg Leu  
 245 250 255

Tyr Asp Ala Pro Gln Thr Pro Leu Asp Arg Pro Leu Ala Ala Arg Val  
 260 265 270

Leu Ser Ala Ala Gln Gln Ala Asp Leu Ile Thr Tyr Arg Asp Ser Leu  
 275 280 285

Asn Pro Ala Gln Ile Gly Arg Lys Ile Ala Asp Leu Gln Asn Arg Leu  
 290 295 300

Leu Ile Leu Ala Lys Glu Lys Thr Glu Gln Leu Tyr Leu Ala Asn Ile  
 305 310 315 320

Pro Thr Ala Leu Pro Asp Ile His Lys Gly Ile Leu Ile Lys Ala Gly  
 325 330 335

<210> 38  
 <211> 110  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 38

Val Val Gln Gly Arg Thr Val Leu Phe Arg Thr Ala Glu Gly Ala Lys  
 1 5 10 15

Leu Phe Ser Ala Val Ala Lys Cys Ala Val Ala Phe Glu Ala Asp Asp  
 20 25 30

His Asn Val Ala Glu Gly Trp Ser Val Ile Val Lys Val Arg Ala Gln  
 35 40 45

Val Leu Thr Thr Asp Ala Gly Val Arg Glu Ala Glu Arg Ala Gln Leu  
 50 55 60

Leu Pro Trp Thr Ala Thr Leu Lys Arg His Cys Val Arg Val Ile Pro  
 65 70 75 80

Trp Glu Ile Thr Gly Arg His Phe Arg Phe Gly Pro Glu Pro Asp Arg  
85 90 95

Ser Gln Thr Phe Ala Cys Glu Ala Ser Ser His Asn Gln Arg  
100 105 110

<210> 39  
<211> 463  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 39

Met Asn His Leu Thr Thr Leu Asp Ala Gly Phe Leu Lys Ala Glu Asp  
1 5 10 15

Val Asp Arg His Val Ser Leu Ala Ile Gly Ala Leu Ala Val Ile Glu  
20 25 30

Gly Pro Ala Pro Asp Gln Glu Ala Phe Leu Ser Ser Leu Ala Gln Arg  
35 40 45

Leu Arg Pro Cys Thr Arg Phe Gly Gln Arg Leu Arg Leu Arg Pro Phe  
50 55 60

Asp Leu Gly Ala Pro Lys Trp Val Asp Asp Pro Asp Phe Asp Leu Gly  
65 70 75 80

Arg His Val Trp Arg Ile Ala Leu Pro Arg Pro Gly Asn Glu Asp Gln  
85 90 95

Leu Phe Glu Leu Ile Ala Asp Leu Met Ala Arg Arg Leu Asp Arg Gly  
100 105 110

Arg Pro Leu Trp Glu Val Trp Val Ile Glu Gly Leu Ala Asp Ser Lys  
115 120 125

Trp Ala Ile Leu Thr Lys Leu His His Cys Met Ala Asp Gly Ile Ala  
130 135 140

Ala Thr His Leu Leu Ala Gly Leu Ser Asp Glu Ser Met Ser Asp Ser  
145 150 155 160

Phe Ala Ser Asn Ile His Thr Thr Met Gln Ser Gln Ser Ala Ser Val  
165 170 175

Arg Arg Gly Gly Phe Arg Val Asn Pro Ser Glu Ala Leu Thr Ala Ser  
180 185 190

Thr Ala Val Met Ala Gly Ile Val Arg Ala Ala Lys Gly Ala Ser Glu  
195 200 205

Ile Ala Ala Gly Val Leu Ser Pro Ala Ala Ser Ser Leu Asn Gly Pro  
210 215 220

Ile Ser Asp Leu Arg Arg Tyr Ser Ala Ala Lys Val Pro Leu Ala Asp  
225 230 235 240

Val Glu Gln Val Cys Arg Lys Phe Asp Val Thr Ile Asn Asp Val Ala  
245 250 255

Leu Ala Ala Ile Thr Glu Ser Tyr Arg Asn Val Leu Ile Gln Arg Gly  
260 265 270

Glu Arg Pro Arg Phe Asp Ser Leu Arg Thr Leu Val Pro Val Ser Thr  
275 280 285

Arg Ser Asn Ser Ala Leu Ser Lys Thr Asp Asn Arg Val Ser Leu Met  
290 295 300

Leu Pro Asn Leu Pro Val Asp Gln Glu Asn Pro Leu Gln Arg Leu Arg  
305 310 315 320

Ile Val His Ser Arg Leu Thr Arg Ala Lys Ala Gly Gly Gln Arg Gln  
325 330 335

Phe Gly Asn Thr Leu Met Ala Ile Ala Asn Arg Leu Pro Phe Pro Met  
340 345 350

Thr Ala Trp Ala Val Gly Leu Leu Met Arg Leu Pro Gln Arg Gly Val  
355 360 365

Val Thr Val Ala Thr Asn Val Pro Gly Pro Arg Arg Pro Leu Gln Ile  
370 375 380

Met Gly Arg Arg Val Leu Asp Leu Tyr Pro Val Ser Pro Ile Ala Met  
385 390 395 400

Gln Leu Arg Thr Ser Val Ala Met Leu Ser Tyr Ala Asp Asp Leu Tyr  
405 410 415

Phe Gly Ile Leu Ala Asp Tyr Asp Val Val Ala Asp Ala Gly Gln Leu  
420 425 430

Ala Arg Gly Ile Glu Asp Ala Val Ala Arg Leu Val Ala Ile Ser Lys  
 435 440 445

Arg Arg Lys Val Thr Arg Arg Arg Gly Ala Leu Ser Leu Val Val  
 450 455 460

<210> 40  
 <211> 332  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 40

Met Asn Thr His Phe Pro Asp Ala Glu Thr Val Arg Thr Val Leu Thr  
 1 5 10 15

Leu Ala Val Arg Ala Pro Ser Ile His Asn Thr Gln Pro Trp Arg Trp  
 20 25 30

Arg Val Cys Pro Thr Ser Leu Glu Leu Phe Ser Arg Pro Asp Met Gln  
 35 40 45

Leu Arg Ser Thr Asp Pro Asp Gly Arg Glu Leu Ile Leu Ser Cys Gly  
 50 55 60

Val Ala Leu His His Cys Val Val Ala Leu Ala Ser Leu Gly Trp Gln  
 65 70 75 80

Ala Lys Val Asn Arg Phe Pro Asp Pro Lys Asp Arg Cys His Leu Ala  
 85 90 95

Thr Ile Gly Val Gln Pro Leu Val Pro Asp Gln Ala Asp Val Ala Leu  
 100 105 110

Ala Ala Ala Ile Pro Arg Arg Arg Thr Asp Arg Arg Ala Tyr Ser Cys  
 115 120 125

Trp Pro Val Pro Gly Gly Asp Ile Ala Leu Met Ala Ala Arg Ala Ala  
 130 135 140

Arg Gly Gly Val Met Leu Arg Gln Val Ser Ala Leu Asp Arg Met Lys  
 145 150 155 160

Ala Ile Val Ala Gln Ala Val Leu Asp His Val Thr Asp Glu Glu Tyr  
 165 170 175

Leu Arg Glu Leu Thr Ile Trp Ser Gly Arg Tyr Gly Ser Val Ala Gly  
 180 185 190



Val Pro Ala Arg Asn Glu Pro Pro Ser Asp Pro Ser Ala Pro Ile Pro  
 195 200 205

Gly Arg Leu Phe Ala Gly Pro Gly Leu Ser Gln Pro Ser Asp Val Leu  
 210 215 220

Pro Ala Asp Asp Gly Ala Ala Ile Leu Ala Leu Gly Thr Glu Thr Asp  
 225 230 235 240

Asp Arg Leu Ala Arg Leu Arg Ala Gly Glu Ala Ala Ser Ile Val Leu  
 245 250 255

Leu Thr Ala Thr Ala Met Gly Leu Ala Cys Cys Pro Ile Thr Glu Pro  
 260 265 270

Leu Glu Ile Ala Lys Thr Arg Asp Ala Val Arg Ala Glu Val Phe Gly  
 275 280 285

Ala Gly Gly Tyr Pro Gln Met Leu Leu Arg Val Gly Trp Ala Pro Ile  
 290 295 300

Asn Ala Asp Pro Leu Pro Pro Thr Pro Arg Arg Glu Leu Ser Gln Val  
 305 310 315 320

Val Glu Trp Pro Glu Glu Leu Leu Arg Gln Arg Cys  
 325 330

<210> 41  
 <211> 578  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 41

Met Thr Thr Gly Gly Leu Val Asp Glu Asn Asp Gly Ala Ala Met Arg  
 1 5 10 15

Pro Leu Arg His Thr Leu Ser Gln Leu Arg Leu His Glu Leu Leu Val  
 20 25 30

Glu Val Gln Asp Arg Val Glu Gln Ile Val Glu Gly Arg Asp Arg Leu  
 35 40 45

Asp Gly Leu Val Glu Ala Met Leu Val Val Thr Ala Gly Leu Asp Leu  
 50 55 60

Glu Ala Thr Leu Arg Ala Ile Val His Ser Ala Thr Ser Leu Val Asp  
 65 70 75 80

Ala Arg Tyr Gly Ala Met Glu Val His Asp Arg Gln His Arg Val Leu  
                     85                    90                    95

His Phe Val Tyr Glu Gly Ile Asp Glu Glu Thr Val Arg Arg Ile Gly  
                     100                    105                    110

His Leu Pro Lys Gly Leu Gly Val Ile Gly Leu Leu Ile Glu Asp Pro  
                     115                    120                    125

Lys Pro Leu Arg Leu Asp Asp Val Ser Ala His Pro Ala Ser Ile Gly  
                     130                    135                    140

Phe Pro Pro Tyr His Pro Pro Met Arg Thr Phe Leu Gly Val Pro Val  
 145                    150                    155                    160

Arg Val Arg Asp Glu Ser Phe Gly Thr Leu Tyr Leu Thr Asp Lys Thr  
                     165                    170                    175

Asn Gly Gln Pro Phe Ser Asp Asp Asp Glu Val Leu Val Gln Ala Leu  
                     180                    185                    190

Ala Ala Ala Ala Gly Ile Ala Val Ala Asn Ala Arg Leu Tyr Gln Gln  
                     195                    200                    205

Ala Lys Ala Arg Gln Ser Trp Ile Glu Ala Thr Arg Asp Ile Ala Thr  
                     210                    215                    220

Glu Leu Leu Ser Gly Thr Glu Pro Ala Thr Val Phe Arg Leu Val Ala  
 225                    230                    235                    240

Ala Glu Ala Leu Lys Leu Thr Ala Ala Asp Ala Ala Leu Val Ala Val  
                     245                    250                    255

Pro Val Asp Glu Asp Met Pro Ala Ala Asp Val Gly Glu Leu Leu Val  
                     260                    265                    270

Ile Glu Thr Val Gly Ser Ala Val Ala Ser Ile Val Gly Arg Thr Ile  
                     275                    280                    285

Pro Val Ala Gly Ala Val Leu Arg Glu Val Phe Val Asn Gly Ile Pro  
                     290                    295                    300

Arg Arg Val Asp Arg Val Asp Leu Glu Gly Leu Asp Glu Leu Ala Asp  
 305                    310                    315                    320

Ala Gly Pro Ala Leu Leu Leu Pro Leu Arg Ala Arg Gly Thr Val Ala  
 325 330 335

Gly Val Val Val Val Leu Ser Gln Gly Gly Pro Gly Ala Phe Thr Asp  
 340 345 350

Glu Gln Leu Glu Met Met Ala Ala Phe Ala Asp Gln Ala Ala Leu Ala  
 355 360 365

Trp Gln Leu Ala Thr Ser Gln Arg Arg Met Arg Glu Leu Asp Val Leu  
 370 375 380

Thr Asp Arg Asp Arg Ile Ala Arg Asp Leu His Asp His Val Ile Gln  
 385 390 395 400

Arg Leu Phe Ala Ile Gly Leu Ala Leu Gln Gly Ala Val Pro His Glu  
 405 410 415

Arg Asn Pro Glu Val Gln Gln Arg Leu Ser Asp Val Val Asp Asp Leu  
 420 425 430

Gln Asp Val Ile Gln Glu Ile Arg Thr Thr Ile Tyr Asp Leu His Gly  
 435 440 445

Ala Ser Gln Gly Ile Thr Arg Leu Arg Gln Arg Ile Asp Ala Ala Val  
 450 455 460

Ala Gln Phe Ala Asp Ser Gly Leu Arg Thr Ser Val Gln Phe Val Gly  
 465 470 475 480

Pro Leu Ser Val Val Asp Ser Ala Leu Ala Asp Gln Ala Glu Ala Val  
 485 490 495

Val Arg Glu Ala Val Ser Asn Ala Val Arg His Ala Lys Ala Ser Thr  
 500 505 510

Leu Thr Val Arg Val Lys Val Asp Asp Asp Leu Cys Ile Glu Val Thr  
 515 520 525

Asp Asn Gly Arg Gly Leu Pro Asp Glu Phe Thr Gly Ser Gly Leu Thr  
 530 535 540

Asn Leu Arg Gln Arg Ala Glu Gln Ala Gly Gly Glu Phe Thr Leu Ala  
 545 550 555 560

Ser Val Pro Gly Ala Ser Gly Thr Val Leu Arg Trp Ser Ala Pro Leu  
565 570 575

Ser Gln

<210> 42  
<211> 268  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 42

Met Ser Asp Pro Arg Pro Ala Arg Ala Val Val Val Gly Ile Asp Gly  
1 5 10 15

Ser Arg Ala Ala Thr His Ala Ala Leu Trp Ala Val Asp Glu Ala Val  
20 25 30

Asn Arg Asp Ile Pro Leu Arg Leu Val Tyr Val Ile Asp Pro Ser Gln  
35 40 45

Leu Ser Ala Ala Gly Glu Gly Gly Gly Gln Ser Ala Ala Arg Ala Ala  
50 55 60

Leu His Asp Ala Ser Arg Lys Val Glu Ala Thr Gly Gln Pro Val Lys  
65 70 75 80

Ile Glu Thr Glu Val Leu Cys Gly Arg Pro Leu Thr Lys Leu Met Gln  
85 90 95

Glu Ser Arg Ser Ala Ala Met Leu Cys Val Gly Ser Val Gly Leu Asp  
100 105 110

His Val Arg Gly Arg Arg Gly Ser Val Ala Ala Thr Leu Ala Gly Ser  
115 120 125

Ala Leu Cys Pro Val Ala Val Ile His Pro Ser Pro Ala Glu Pro Ala  
130 135 140

Thr Thr Ser Gln Val Ser Ala Val Val Ala Glu Val Asp Asn Gly Val  
145 150 155 160

Val Leu Arg His Ala Phe Glu Glu Ala Arg Leu Arg Gly Val Pro Leu  
165 170 175

Arg Ala Val Ala Val His Ala Ala Glu Thr Pro Asp Asp Val Glu Gln  
180 185 190

Gly Ser Arg Leu Ala His Val His Leu Ser Arg Arg Leu Ala His Trp  
 195 200 205

Thr Arg Leu Tyr Pro Glu Val Arg Val Asp Arg Ala Ile Ala Gly Gly  
 210 215 220

Ser Ala Cys Arg His Leu Ala Ala Asn Ala Lys Pro Gly Gln Leu Phe  
 225 230 235 240

Val Ala Asp Ser His Ser Ala His Glu Leu Cys Gly Ala Tyr Gln Pro  
 245 250 255

Gly Cys Ala Val Leu Thr Val Arg Ser Ala Asn Leu  
 260 265

<210> 43  
 <211> 181  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 43

Met Thr Glu Tyr Glu Gly Pro Lys Thr Lys Phe His Ala Leu Met Gln  
 1 5 10 15

Glu Gln Ile His Asn Glu Phe Thr Ala Ala Gln Gln Tyr Val Ala Ile  
 20 25 30

Ala Val Tyr Phe Asp Ser Glu Asp Leu Pro Gln Leu Ala Lys His Phe  
 35 40 45

Tyr Ser Gln Ala Val Glu Glu Arg Asn His Ala Met Met Leu Val Gln  
 50 55 60

His Leu Leu Asp Arg Asp Leu Arg Val Glu Ile Pro Gly Val Asp Thr  
 65 70 75 80

Val Arg Asn Gln Phe Asp Arg Pro Arg Glu Ala Leu Ala Leu Ala Leu  
 85 90 95

Asp Gln Glu Arg Thr Val Thr Asp Gln Val Gly Arg Leu Thr Ala Val  
 100 105 110

Ala Arg Asp Glu Gly Asp Phe Leu Gly Glu Gln Phe Met Gln Trp Phe  
 115 120 125

Leu Gln Glu Gln Ile Glu Glu Val Ala Leu Met Ala Thr Leu Val Arg  
 130 135 140

Val Ala Asp Arg Ala Gly Ala Asn Leu Phe Glu Leu Glu Asn Phe Val  
 145 150 155 160

Ala Arg Glu Val Asp Val Ala Pro Ala Ala Ser Gly Ala Pro His Ala  
 165 170 175

Ala Gly Gly Arg Leu  
 180

<210> 44  
 <211> 274  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 44

Met Thr Trp Ala Asp Glu Val Leu Ala Gly His Pro Phe Val Val Ala  
 1 5 10 15

His Arg Gly Ala Ser Ala Ala Arg Pro Glu His Thr Leu Ala Ala Tyr  
 20 25 30

Asp Leu Ala Leu Lys Glu Gly Ala Asp Gly Val Glu Cys Asp Val Arg  
 35 40 45

Leu Thr Arg Asp Gly His Leu Val Cys Val His Asp Arg Arg Leu Asp  
 50 55 60

Arg Thr Ser Thr Gly Ala Gly Leu Val Ser Thr Met Thr Leu Ala Gln  
 65 70 75 80

Leu Arg Glu Leu Glu Tyr Gly Ala Trp His Asp Ser Trp Arg Pro Asp  
 85 90 95

Gly Ser His Gly Asp Thr Ser Leu Leu Thr Leu Asp Ala Leu Val Ser  
 100 105 110

Leu Val Leu Asp Trp His Arg Pro Val Lys Ile Phe Val Glu Thr Lys  
 115 120 125

His Pro Val Arg Tyr Gly Ser Leu Val Glu Asn Lys Leu Leu Ala Leu  
 130 135 140

Leu His Arg Phe Gly Ile Ala Ala Pro Ala Ser Ala Asp Arg Ser Arg  
 145 150 155 160

Ala Val Val Met Ser Phe Ser Ala Ala Ala Val Trp Arg Ile Arg Arg  
165 170 175

Ala Ala Pro Leu Leu Pro Thr Val Leu Leu Gly Lys Thr Pro Arg Tyr  
180 185 190

Leu Thr Ser Ser Ala Ala Thr Ala Val Gly Ala Thr Ala Val Gly Pro  
195 200 205

Ser Leu Pro Ala Leu Lys Glu Tyr Pro Gln Leu Val Asp Arg Ser Ala  
210 215 220

Ala Gln Gly Arg Ala Val Tyr Cys Trp Asn Val Asp Glu Tyr Glu Asp  
225 230 235 240

Ile Asp Phe Cys Arg Glu Val Gly Val Ala Trp Ile Gly Thr His His  
245 250 255

Pro Gly Arg Thr Lys Ala Trp Leu Glu Asp Gly Arg Ala Asn Gly Thr  
260 265 270

Thr Arg

<210> 45  
<211> 248  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 45

Val Ser Asp Gly Glu Gln Ala Lys Ser Arg Arg Arg Arg Gly Arg Arg  
1 5 10 15

Arg Gly Arg Arg Ala Ala Ala Thr Ala Glu Asn His Met Asp Ala Gln  
20 25 30

Pro Ala Gly Asp Ala Thr Pro Thr Pro Ala Thr Ala Lys Arg Ser Arg  
35 40 45

Ser Arg Ser Pro Arg Arg Gly Ser Thr Arg Met Arg Thr Val His Glu  
50 55 60

Thr Ser Ala Gly Gly Leu Val Ile Asp Gly Ile Asp Gly Pro Arg Asp  
65 70 75 80

Ala Gln Val Ala Ala Leu Ile Gly Arg Val Asp Arg Arg Gly Arg Leu  
85 90 95

Leu Trp Ser Leu Pro Lys Gly His Ile Glu Leu Gly Glu Thr Ala Glu  
100 105 110

Gln Thr Ala Ile Arg Glu Val Ala Glu Glu Thr Gly Ile Arg Gly Ser  
115 120 125

Val Leu Ala Ala Leu Gly Arg Ile Asp Tyr Trp Phe Val Thr Asp Gly  
130 135 140

Arg Arg Val His Lys Thr Val His His Tyr Leu Met Arg Phe Leu Gly  
145 150 155 160

Gly Glu Leu Ser Asp Glu Asp Leu Glu Val Ala Glu Val Ala Trp Val  
165 170 175

Pro Ile Arg Glu Leu Pro Ser Arg Leu Ala Tyr Ala Asp Glu Arg Arg  
180 185 190

Leu Ala Glu Val Ala Asp Glu Leu Ile Asp Lys Leu Gln Ser Asp Gly  
195 200 205

Pro Ala Ala Leu Pro Pro Leu Pro Pro Ser Ser Pro Arg Arg Arg Pro  
210 215 220

Gln Thr His Ser Arg Ala Arg His Ala Asp Asp Ser Ala Pro Gly Gln  
225 230 235 240

His Asn Gly Pro Gly Pro Gly Pro  
245

<210> 46  
<211> 819  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 46  
gtggaaccga aacgcagtcg cctcgtcgta tgtgcacccg agccatcgca cgcgcgggaa 60  
ttcccgggatg tcgccgtatt ctccggcggc cgggctaacg catcccaggc cgaacggttg 120  
gctcgtgccg tgggtcgcgt gttggccgat cggggcgtca ccgggggtgc tcgggtgcgg 180  
ctgaccatgg cgaactgcgc cgatgggccc acgctggtgc agataaacct gcaggtaggt 240  
gacaccccat taagggcgca ggccgccacc gcgggcatcg atgatctgcg acccgcactg 300  
atcagactgg atcgacagat cgtgcggggc tcggcacagt ggtgcccccg gccttggccg 360



gatcggcccc gccggcgatt gaccacgccg gccgaggcgc tagtcacccg ccgcaaaccg	420
gtcgtgctaa ggcgcgcaac cccgttgtag gcgattgccg ctatggacgc catggactac	480
gacgtgcatt tggtcaccga cgccgagacg ggggaggacg ctgtggtcta tggggctgga	540
ccgtcggggc tgcggctggc ccgccagcac cacgtatttc ccccaggatg gtcacgttgt	600
cgcgccccag ccgggcccgc ggtgccgctg attgtgaatt cgcgccgac accggttctc	660
acggaggccg ccgcggtgga ccgggcgcgc gaacatggac tgccattcct gtttttcacc	720
gaccaggcca ccggccgcgc ccagctgctc tactcccgct acgacggcaa cctcgggttg	780
atcaccccca ccggtgacgg cgttgccgac ggtctggca	819

<210> 47  
 <211> 819  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 47	
gtggaaccga aacgcagtcg cctcgtcgta tgtgcacccg agccatcgca cgcgcgggaa	60
ttcccggatg tcgccgtatt ctccggcggc cgggctaacg catcccaggc cgaacggttg	120
gctcgtgccg tgggtcgctg gttggccgat cggggcgta ccgggggtgc tggggtgcgg	180
ctgaccatgg cgaactgcgc cgatgggccg acgctggtgc agataaacct gcaggtaggt	240
gacaccccat taagggcgca ggccgccacc gcgggcatcg atgatctgcg accgcactg	300
atcagactgg atcgacagat cgtgcgggcg tcggcacagt ggtgcccccg gccttggccg	360
gatcggcccc gccggcgatt gaccacgccg gccgaggcgc tagtcacccg ccgcaaaccg	420
gtcgtgctaa ggcgcgcaac cccgttgtag gcgattgccg ctatggacgc catggactac	480
gacgtgcatt tggtcaccga cgccgagacg ggggaggacg ctgtggtcta tggggctgga	540
ccgtcggggc tgcggctggc ccgccagcac cacgtatttc ccccaggatg gtcacgttgt	600
cgcgccccag ccgggcccgc ggtgccgctg attgtgaatt cgcgccgac accggttctc	660
acggaggccg ccgcggtgga ccgggcgcgc gaacatggac tgccattcct gtttttcacc	720
gaccaggcca ccggccgcgc ccagctgctc tactcccgct acgacggcaa cctcgggttg	780
atcaccccca ccggtgacgg cgttgccgac ggtctggca	819

<210> 48  
 <211> 342  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 48	
gtggagtccg aaccgctgta caagctcaag gcggagttct tcaaaaccct tgcgcatccg	60

gcgcggatca ggatttttga gctgctggtc gagcgggacc gttcgggtcgg tgagttgctg	120
tcctcggacg tcggcctgga gtcgtcgaac ctgtcccagc agctgggtgt gctacgccgg	180
gcggtgtgtg tcgcggcacg tcgtgacggc aacgcgatga tctattcgat tgccgcaccc	240
gatatcgccg agctgctggc ggtggcacgc aaggtgctgg ccagggtgct cagcgaccgg	300
gtggcggtgc tagaggacct ccgcgccggc ggctcggcca cg	342

<210> 49  
 <211> 1032  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 49	
atgcctatcg caacgcccga ggtctacgcg gagatgctcg gtcaggccaa aaaaaactcg	60
tacgctttcc cggctatcaa ctgcacctcc tcggaaaccg tcaacgccgc gatcaaaggt	120
ttcgccgacg ccggcagtga cggaatcatc cagttctcga ccggtggcgc agaattcggc	180
tccggcctcg gggtaaaga catggtgacc ggtgcggtcg ccttggcgga gttcaccac	240
gttatcgcg ccaagtaccc ggtcaacgtg gcgctgcaca ccgaccactg cccaaggac	300
aagttggaca gctatgtccg gcccttgctg gcgatctcgg cgcaacgct gagcaaaggt	360
ggcaatcctt tgttccagtc gcacatgtgg gacggctcgg cagtgccaat cgatgagaac	420
ctggccatcg ccaggagct gctcaaggcg gcggcgcccg ccaagatcat tctggagatc	480
gagatcgcg tcgtcggcgg cgaagaggac ggcgtggcga acgagatcaa cgagaagctg	540
tacaccagcc cggaggactt cgagaaaacc atcgaggcgc tggcgccgg tgagcacggc	600
aaatacctgc tggccgcgac gttcggcaac gtgcatggcg tctacaagcc cggcaacgtc	660
aagcttcgcc ccgacatcct tgcgcaaggg caacagggtg cgccggccaa gtcggactg	720
ccggccgacg ccaagccgtt cgacttcgtg ttccacggcg gctcgggttc gcttaagtcg	780
gagatcgagg aggcgctgcg ctacggcgtg gtgaagatga acgtcgacac cgacaccag	840
tacgcgttca cccgccgat cgccggtcac atgttcacca actacgacgg agtgetcaag	900
gtcgatggcg aggtgggtgt caagaaggtc tacgaccgc gcagctacct caagaaggcc	960
gaagcttcga tgagccagcg ggtcggttcag gcgtgcaatg acctgcactg cgccggaaag	1020
tccctaacct ac	1032

<210> 50  
 <211> 339  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 50	
atgggtgagc acgcatcaa gcggcacatg cggcaacgga agcctacgaa gcatccccta	60

gcccagaaac	ggggcgcgcg	gattctggtc	ttcaccgacg	atccccgcag	gagcgtcctc	120
atagtgtccc	gttgccacct	ggattccatg	cgccgagaaa	agaacgcgta	ctacttccag	180
gacggcaatg	cgttggttgg	gatggttgtc	tcgggcggca	cggttgagta	cgacgccgac	240
gaccgcacat	atgtcgtgca	gctcaccgac	ggaaggcaca	ccactgagtc	atcttttcgaa	300
cactcatcgc	cgagtcgac	acctcaatcc	gatgaccta			339

<210> 51  
 <211> 1140  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 51	
gtggctggca	atcctgatgt ggtgacggtg ctgctgggcg gtgacgtcat gctcggccgt 60
ggcgtcgatc	agatcctgcc tcatcccggc aaaccgcaat tgcgcgaacg gtatatgcgg 120
gatgcgaccg	gctatgttcg cctggccgag cgggtgaacg ggcgcatcctc gctccccgtg 180
gattggcgct	ggccctgggg cgaggcgctt gcggtccttg agaacaccgc gaccgacgtc 240
tgtttgatca	atctggagac gacgatcacc gccgacggtg aattcgccga ccgcaaaccg 300
gtctgctacc	ggatgcaccc ggataacgtg ccggcgctga cggcattgcg gccgcacgtg 360
tgcgcgctgg	ccaacaacca cattctcgat ttcggctacc aggggctgac cgatacggtc 420
gcggctctcg	ccggtgcggg gatccagagt gtcggggcgcg gagccgattt gctcgccgct 480
cgccgctcgg	cgctagtcac ggttggccat gaacgccggg tgatcgtcgg ctcggtagcg 540
gcggaatcca	gcggcgctccc cgaatcctgg gccgcccgcc gcgaccggcc cggagtgtgg 600
ttgatccggg	atccggcgca acgcgacgtc gccgacgatg tggcggcaca ggtgctggcg 660
gacaaacgcc	ccggcgatat cgccatagtc tcgatgcatt ggggatccaa ttggggctat 720
gcgaccgcac	ccggcgacgt cgcgttcgcg caccgactga tcgacgccgg catcgacatg 780
gtccacggac	attcctcgca ccatccgcg ccaatcgaga tatatcgcg taaaccgatc 840
ctgtacggat	gcggtgacgt cgttgacgac tacgaaggca tcggcgggca cgagtcgttc 900
cgcagtgaac	tgcgactgct gtatctgacc gtcaccgatc ccgccagcgg gaacctgac 960
tcgctgcaga	tgcttcact gcgagtgtcg cggatgcgcc tacagcgtgc ctcccagacc 1020
gacaccgaat	ggctccgcaa caccattgag cgcacagcc gccggttcgg gattcgagtc 1080
gtgactcgac	ccgacaacct gctggaggtc gttcccgtg ccaacctaac gagcaaggag 1140

<210> 52  
 <211> 1191  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 52  
 gtgacagacc acgtgcgcgga ggcggacgac gcgaacatcg acgatctgtt gggcgacctg 60  
 ggcggtaccg cgcgcgccga gcgtgcgaag cttgtcgagt gggtgctcga gcagggcatc 120  
 acccccgacg agattcgggc gaccaacccg ccgttgctgc tggccacccg ccacctcgtc 180  
 ggcgacgacg gcacctacgt atccgcaagg gagattagcg agaactatgg cgttgacctc 240  
 gagctgctgc agcgggtgca gcgcgctgtc ggtctggcca gaggatga tectgacgcy 300  
 gtggtgcaca tgcgtgccga cggtagggcg gccgcacgcy cacagcgggt cgttgagctg 360  
 gggctgaatc ccgaccaagt cgtgctggtc gtgcgtgtgc tcgccagggg cttgtcacac 420  
 gccgccgagg ccatgcgcta caccgcgctg gaggccatta tgcggccggg ggctaccgag 480  
 ttggacatcg cgaaggggtc gcaggcgctg gtgagccaga tcgtgccgct gctggggccg 540  
 atgatccagg acatgctgtt catgcagctg cggcacatga tggagacgga ggccgtcaac 600  
 gccggagagc gtgcggccgg caagccgcta cgggagcgc gacaggtcac cgttgccttc 660  
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 ctgcgcgggc ggctggccgg cctcgcgctg gacctgaccg ctccgcgggt gtggttcatt 780  
 aagacgatcg gcgacgcggt catgttggtc tgcctgatc cggcgccatt gctggacacc 840  
 gtgctgaagc tggtcgaggt cgtcgacacc gacaacaact ttccccggct gcgagccggc 900  
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 gcaagccggg tgaccggggg ggcgcgcccg ggtgccgtgc tggtcgcgga ttcgggtgcg 1020  
 gaggcccttg gtgatgcccc cgaagccgac ggatttcagt ggtccttcgc cggcccccg 1080  
 cgctcaggg gaatccgggg tgacgtcagg ctttttcgag tccggcgagg ggccactcgc 1140  
 accggctccg gcggcgcggc ccaagacgac gatttggccg gctcgtcacc g 1191

<210> 53  
 <211> 1338  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 53  
 atggtagagc ccggcaattt ggcaggcgcg accggcgccg aatggatcgg ccggccaccg 60  
 cacgaggaat tgcagcgcaa agtgcgcccg ctgctgccat ccgacgatcc gttctacttc 120  
 ccacctgccg gctaccagca tgccgtgcc ggaacgggtg tgcgctcgcg cgatgtcgaa 180  
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 acgaacatgt acggcaaccc cgaggcgacg gtgaccacgg tgatcgccc agcggagctt 300  
 gccccgggtc agacctgccc cttgctgtcg taccagtgtg cgatcgatgc catgctcgtc 360

cgctgttttc	cgtcatatgc	cctgcgacga	cgggccaaagg	ccctgggggtc	actgacccaa	420
atggagctgt	tgatgatcag	cgccgcactt	gccgaaggat	gggcggtatc	agtacccgac	480
catgaagggc	cgaaagggct	gtgggggtcg	ccgtatgaac	ccggttaccg	agtcctcgac	540
ggaatccggg	ctgccttgaa	ttccgagcgt	gtcgggttgt	ccccggcaac	gccgatcggg	600
ctgtggggct	actccggcgg	cgggctggcc	agcgcgtggg	ccgccgaagc	atgcggcgag	660
tacgcaccgg	acctagacat	cgtcggcgcc	gtgctgggat	caccgcgcgg	tgaccttggt	720
cacacgttcc	gccgggtcaa	tggcactctt	cttgccggtc	tgcccgcgtt	ggtggtggcc	780
gcgctgcaac	acagctaccc	cggcctggcc	cgggtgatca	aggagcacgc	caacgacgaa	840
ggacgtcagc	tgctggagca	actgacggag	atgacaacgg	tagacgcagt	gatccggatg	900
gccggcaggg	acatgggtga	cttcctcgac	gaaccccttg	aggacattct	gtcgacgccg	960
gaaatttccc	atgtcttcgg	cgacaccaag	ctgggtagcg	cggtgcccac	cccgccggta	1020
ttgatcgtgc	aggccgtgca	tgactacctc	atcgacgtct	ctgacatcga	cgcgctcgct	1080
gacagctata	cagccggcgg	cgccaacgtc	acctaccacc	gcgacctgtt	cagcgaacat	1140
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ggcaagccac	tgaccgacca	ccgcgtccgg	accacgtggc	cgaccatctt	caacccgatg	1260
acctacgccg	gcatggcgag	actggccgtg	atcgcggccca	aggtgatcac	cggcaggaag	1320
ttgagccgcc	gtccgctc					1338

<210> 54  
 <211> 630  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 54	
atgatcgcca	caacccgcga
togtgaagga	gccaccatga
tcacgtttag	gctgcgcttg
	60
ccgtgccgga	cgatactgcg
ggtgttcagc	cgcaatccgc
tggtgcgtgg	gacggatcga
	120
ctcgaggcgg	tcgtcatgct
gctggccgtc	acgggtctgc
tgctgactat	cccgttcgcc
	180
gccgcggccg	gcaccgcagt
ccaggattcc	cgcagccacg
tctatgccc	ccaggcccag
	240
acccgccatc	ccgcaaccgc
gaccgtgata	gatcacgagg
gggtgatcga	cagcaacacg
	300
accgccacgt	cagcgcgcgc
gcgcacgaag	atcacctgct
ctgcccgatg	ggtcgtgaac
	360
ggaatagaac	gcagcgggtga
ggtcaacgcg	aagccgggaa
ccaaatccgg	tgaccgcgtc
	420
ggcatttggg	tcgacagtgc
cggtcagctg	gtcgatgaac
cagctccgcc	ggcccgtgcc
	480
attgcggatg	cggccctggc
cgccttggga	ctctgggtga
gcgtcgccgc	ggttgcgggc
	540
gccctgctgg	cgctcactcg
ggcgattctg	atccgcgttc
gcaacgccag	ttggcaacac
	600

gacatcgaca gcctgttctg cacgcagcgg 630

<210> 55  
 <211> 240  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 55  
 atgaccaacg tcggtgacca gggggttgac gcggtcttcg gggatgatcta cccacctcag 60  
 gtcgcgctgg tcagtttcgg caagccggca caacgagttt gcgccgtcga cggcgcgatc 120  
 cacgtcatga cgaccgtgct ggctacgctg cccgctgacc acggctgcag cgatgaccat 180  
 cgcggcgcgc tgttcttcct gtcgatcaac gagctgacgc ggtgcgccgc agtaacagga 240

<210> 56  
 <211> 1956  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 56  
 gtgacggtga caccacggac cggcagccgc atcgaggagc tgcttgacag cagcggccgg 60  
 ttcttcatcc cgggtgagat ctccggcgat ctgcgtaccg tgaccgccg cggcgccgc 120  
 gacggcgacg tgttctatcg agaccggtgg agccacgaca agtggtccg ctccacacac 180  
 ggggtgaatt gcaccgggtc gtgttcttgg aagatctacg tcaaagacga catcatcacc 240  
 tgggagacgc aggagaccga ctatccgtcg gtgggcccgg accggcccga gtatgagccc 300  
 cgcggctgcc cgcgcggcgc ggcgttttcc tggtagacgt attcgccgac gcgggtgcgc 360  
 catccgtacg cccgcggcgt gcttgctcag atgtatcggg aggcgaaggc acgtttgggt 420  
 gatccggtgg cggcctgggc cgacatccag gccgacccgc ggccgcgccg ccgctaccag 480  
 cgcgcccgcg gcaagggcgg gctgggtccg gtcagctggg ccgaggccac cgagatgatc 540  
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 cccatcccgg cgatgtccat ggtgagccac gccgcggggc cgcggttcgt ggagctaata 660  
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 <212> DNA  
 <213> Mycobacterium tuberculosis

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 <212> DNA  
 <213> Mycobacterium tuberculosis

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 <213> Mycobacterium tuberculosis

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 <211> 429  
 <212> DNA  
 <213> *Mycobacterium tuberculosis*

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 <211> 2715  
 <212> DNA  
 <213> Mycobacterium tuberculosis

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 <211> 774  
 <212> DNA  
 <213> Mycobacterium tuberculosis

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 <212> DNA  
 <213> Mycobacterium tuberculosis

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 <212> DNA  
 <213> Mycobacterium tuberculosis

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 <211> 342  
 <212> DNA  
 <213> Mycobacterium tuberculosis

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<210> 67  
 <211> 1017  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 67	
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cgcacacgaa	
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gcctcagccg	
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ctcatcaagt	900
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gcagggtgcag	
ccatgctgct	
gacgccaggc	
accgcggcct	960
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cgatgtggag	
aggttcttcg	
agctggcggc	
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gaagtcgggc	1017
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<210> 68  
 <211> 2043  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 68

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ctg	2043

<210> 69  
 <211> 432  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 69	
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cgcaccgagc agaaggactt cgacggtcgc tcggaattcg cgtacggttc cttcgttcgc	300
acgggtgtgc tgccggtagg tgctgacgag gacgacatta aggccacctc cgacaagggc	360
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<210> 70  
 <211> 993  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 70	
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<210> 71  
 <211> 585  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 71	
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gacgaacacc	caggcaagtg gcgggtgggtg ttcttttggc cgaaagactt cacgttcgtg 180
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cagatcctgg	gggttttcgat tgacagcgaa ttcgcgcatt tccagtggcg tgcacagcac 300
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gtactgcgag	tgctcgacgc cctccagtcc gacgagctgt gcgcatgcaa ctggcgcaag 540
ggcgacccga	cgctagacgc tggcgaactc ctcaaggctt cggcc 585

<210> 72  
 <211> 816  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 72	
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ccggataacg aggccgtgct ggaatacgtc gcccggaag cgaagttgcg gcaagcgccc	540
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cacacgggta ttgcccgtt cctggccgac cacgacgagc gcgtacagct ggcagtgatc	720
ggcggtggtg aggccggtca gctagcgcgg ctggtcgggc catccggaca tccggtgttc	780
cgtcacgccg agtgttcggg gcttgtcgtt cgccgc	816

<210> 73

<211> 1179

<212> DNA

<213> Mycobacterium tuberculosis

<400> 73

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ggaggctacc cggccgtggt ctattggctt ctccgcccag gtggcgcggt catgttgctg	180
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gcgttgggat tggccgagtt tgtggctggt ggccctcgtc gtggggtctg gttagccttc	660
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<210> 74  
 <211> 1239  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 74  
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 aacaatcgcg agtacgcctt gttactgcgg caccagagc cgcgccctg gctggtttgt 540  
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 gggacggctc aagcgggtgt ggatatccgg cggtgttgt cctggatacg atcgaggag 780  
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 ggcttcttcc agtcgcgcc ggtacgacgg tttgtccagg ctgcgctgga gcagtcgggc 1200  
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<210> 75  
 <211> 360  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 75  
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 ggccgatgtg gtcggatagg caggtggggg gtgcaccagg aggcgatgat gaatctagcg 120

atatggcacc	cgcgcaaggt	gcaatccgcc	accatctatc	aggtgaccga	tcgctcgcac	180
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tcggagttgg	gcacccaaag	cccgttggcc	gatgagcttg	cgcgtagcgt	gcggatcggc	300
gactggcccc	ctgcgtacgc	aatcgggtgag	cacctgtccg	ttgagattgc	cgttgcggtc	360

<210> 76  
 <211> 1122  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 76	
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gccgcagaag	
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gccattgata	
gaccttgaga	
tgccggcgacc	
gacgtatgta	
tttgccgcgg	420
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cggcgccgac	
gtcaagctgt	
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caccatcagt	
tccacgaaaa	480
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cggctacccg	
gtgcacaagc	
cggtcaccgc	
cggctggaac	
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gaatgaactg	
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ggtagacgct	
gccgaccccg	
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acattgccgc	
agcgggtggc	
gggtccgggtg	
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acatccgcgg	780
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acaacaattt	
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cattcgccgc	
gatcgcggtg	
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cgacaaccgg	
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tagatggggg	
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ctgcgttatg	1122
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<210> 77  
 <211> 537  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 77	
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<210> 78  
 <211> 1125  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 78	
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gaaatcgccg cactgttaag caaactggcc gagaaccagg agatg	1125

<210> 79  
 <211> 1113  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 79  
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 gtgccgttca ccgagcccg cagcgtgctg gcc 1113

<210> 80  
 <211> 312  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 80  
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 gatgctgcgg tcgatgagct gagcgctttg tcgtttgatg cgttgaccac tccggagcgg 180  
 gatcgcgccc gtcgcgaccg ggaccatcat ccttgggtccc gctcccgcct gcagttgtcg 240

ccacgaatgg cgcacggtgc agtgcaccaa tgccagtggc cgaaggcggt ttgggctgtc 300  
attgacaatc ca 312

<210> 81  
<211> 1032  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 81  
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caccgaacgg tgccggccac cgaccattcc ggccggcaag cgatcatcag ttgcggtgcc 180  
gtactcgatc accttcgcat cgccatgacg gccgcgcact ggcaggcgaa tatcactcgc 240  
tttccccagc cgaaccaacc tgaccagttg gccaccgtcg aattcagtc ccatcgatcac 300  
gtcacggcgg gacagcgaaa ccgcgcccag gcgattctgc agcgccgaac cgatcggctt 360  
ccgtttgaca gcccgatgta ctggcacctg tttgagcccg cgctgcgcga cgccgtcgac 420  
aaagacgttg cgatgcttga tgtggtatcc gacgaccagc gaacacgact ggtggttagcg 480  
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gaacgcttgc gggttgacct gggccgtgac ttcccgttcc ggagctacca gaatcgccgt 660  
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gccgacgcac tgaggtgtgg cgaagtgtg tgcaccatcc tactcgagtg caccatggcc 780  
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ccgttggcag cagttccgcg cccacacca cggcggccgc tggacagcgt cttgcagatt 960  
cgccagacgc ccgagaaagg gcgtaatgcc tcagatagaa atgcccgatga aacgggttgg 1020  
ttcagccgc ct 1032

<210> 82  
<211> 1011  
<212> DNA  
<213> Mycobacterium tuberculosis

<400> 82  
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cttgatgggt tggaaagtca cgggtgtgtg gagtttgggc gtgaccgcta tggccccgag 120  
gtgcgtgagg agctgttggc gatgagtgcg gccagcatcg atcgttatct gaagaccgcg 180  
aaggccaaag accagatatc ggggtgtgtc acgacgaaac cctcaccact gctgcgtaat 240

tcgatcaagg	ttcgcagggc	cggcgatgag	gtcgcaggcgg	agccgggggtt	cttcgagggc	300
gacaccgtcg	cccattgcgg	tccgacgctc	aaaggcgagt	tcgcccacac	cctgaacttg	360
accgacgtgc	acatcggatg	gggtgttcacc	cgcaccgtcc	gcaacaacgc	ccgtacccac	420
atcctcgccg	ggctcaaagc	ttctgtcacc	gagatcccg	atgggataac	gggttttagat	480
ttcgacaacg	gcaccgtgtt	tctcaacaag	ccggtcatca	gctggggcgg	cgacaacgg	540
atctacttca	cccgttttcg	cccgtacaag	aaaaaccact	agggccaccat	cgagtccaag	600
aacaaccacc	tggtccgcaa	gtacgcgttc	tactaccgct	atgacaccgc	cgaggaacgc	660
gccgtgctca	accggatgtg	gaagctggtc	aacgaccgcc	tcaactacct	caccccgacc	720
atcaaaccga	tcgggtatgc	cagcagcgcc	gacggccgcc	gccgacgcct	ctacgatgcc	780
ccacagacgc	cgtctggaccg	gccactggcc	gcaagggtgc	tctccgcggc	ccagcaggcc	840
gacctgatca	cctaccgaga	cagcctcaac	cccggcccaga	tcggccgcaa	aatcgccgac	900
ctgcagaacc	gactcctcat	cttggccaag	gagaaaaccg	agcagctcta	cctcgctaac	960
atccccaccg	ccctaccga	catccacaaa	ggcatcctga	tcaaggcggg	c	1011

<210> 83  
 <211> 330  
 <212> DNA  
 <213> Mycobacterium tuberculosis

gtgggtgcaag	gccgcaccgt	gctgtttcgt	accgcggagg	gcgccaaatt	attttcagcc	60
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gtgatcgtea	aggttcgcgc	ccaggtgctg	acgaccgacg	cgggggtccg	cgaagccgaa	180
cgcgcccagt	tactaccgtg	gaccgcgacg	ctgaaacgtc	actgtgtgcg	ggtgatcccg	240
tgggagatca	ccggccgcca	cttcagggtc	ggtccggaac	cggaccgcag	ccagaccttt	300
gcctgcgagg	cctcgtcaca	caaccagcga				330

<210> 84  
 <211> 1389  
 <212> DNA  
 <213> Mycobacterium tuberculosis

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ttcttatcgt	cgtctgctca	acgcctacgt	ccctgtaccc	ggttcgggca	gcggttacgc	180
ctgcgcccgt	tcgacctcgg	tgacacccaa	tgggtggacg	atcccgaact	cgatcttggc	240



cgatcatgtgt	ggcgcatcgc	cttgccgcgg	cctggcaacg	aagaccagtt	attcgagctg	300
atcgccgac	tgatggcgcg	tcgtttggac	cggggtcgac	cgctgtggga	ggctctgggtc	360
atcgaaggcc	tggcggacag	caagtgggcg	atcctgacca	aactgcacca	ctgcatggcc	420
gacggaatcg	cggcgactca	cctgctagct	gggctctccg	atgaaagtat	gagcgacagc	480
ttcgcgagca	acatccacac	gaccatgcag	tcgcaatccg	catctgtgcg	gcgggggtgga	540
ttccgtgtca	atccaagcga	ggcgttgacc	gcgtcgaccg	ccgtgatggc	aggcatcggt	600
cgcgcggcca	aggggtgccag	tgagatcgcg	gccggcgctgc	taagtcccgc	cgcgctcgctg	660
ttgaacgggc	cgatcagtga	tttgcgtcgc	tacagcgagc	caaaggctcc	tctcgccgac	720
gtcgaacagg	tgtgccggaa	attcgacgtc	accatcaatg	atgttgcgct	tgccgcgatt	780
acggaaagct	accgcaacgt	cctcatccag	cggggtgagc	ggcctagggt	tgattcgctg	840
cgtacgctag	tgccggtctc	gacgcgttcc	aacagcgctt	tgagcaagac	cgataaccgt	900
gtttcgtaa	tgctgccccaa	cctgccgggtg	gatcaagaga	acccgctgca	gcggctgcgg	960
atcgtgcact	cgcggctgac	tcggggccaag	gcgggggggac	agagacaatt	cggaataact	1020
ttgatggcga	ttgccaaccg	ccttccgttc	cccatgaccg	catgggcggg	cgggctgttg	1080
atgcggctgc	cgcagcgctg	tggtgtcacc	gtggcgacaa	atgtgccggg	tccacgacgg	1140
ccgctgcaga	ttatgggcag	acgggtgctt	gacctatacc	cggtttcgcc	gatcgcgatg	1200
caactgcgca	ccagtgtcgc	gatgctcagc	tacgccgacg	acctgtactt	cgggatcctg	1260
gccgactacg	acgtggtagc	agatgccggc	cagctggcgc	gaggaattga	agacgccgtc	1320
gcacggctgg	tggcgatcag	taagcggcgc	aaggtgactc	gcaggcgcg	agcgctatcg	1380
ctggttgtg						1389

<210> 85  
 <211> 996  
 <212> DNA  
 <213> *Mycobacterium tuberculosis*

<400> 85	
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tatgcccgac	gagtctggag
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gcagctgcgt	agcaccgatc
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gcaccactgc	gtcgtcgctt
tggcgctcgct	gggctggcag
240	
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cgatcccaag	gaccgctgcc
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300	
caaccgcttg	ttcccgatca
ggccgatgtc	gccttggcgg
cggccatacc	gcggcgacgc
360	
accgatcggc	gcgcctacag
ttgctggccg	gtgccaggag
gtgacatcgc	gttgatggcc
420	

gcaagagcag cccgtggcgg ggtcatgctg cggcaggtca gtgccctaga ccgaatgaaa	480
gccattgtgg cgcaggctgt cttggaccac gtgaccgacg aggaatatct gcgcgagctc	540
accatttgga gtggggcgcta cggttcagtg gccggggttc ccgcccgcaa cgagccgcca	600
tcagacccca gtgccccgat ccccggtcgc ctgttcgccg ggccccgtct gtctcagccg	660
tccgacgtct taccgcgtga cgacggcgcc gcgacccctgg cactaggcac cgagacagac	720
gaccggttgg cccggctgcg cgccggcgag gccgccagca tcgtcttggt gaccgcgacg	780
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gcggtccgtg ccgaggtggt cggcgccggc ggctaccccc agatgctgct gcgagtgggt	900
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<210> 86  
 <211> 1734  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 86	
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<210> 87  
 <211> 804  
 <212> DNA  
 <213> *Mycobacterium tuberculosis*

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cttacggtac gcagtgccaa cttg	804

<210> 88  
 <211> 543  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 88  
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 ctc 543

<210> 89  
 <211> 822  
 <212> DNA  
 <213> Mycobacterium tuberculosis

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 gaccgctcgg cagctcaggg ccgggcggtg tactgctgga acgtcgatga gtacgaggac 720  
 atcgactttt gccgggaggt cggggtggcc tggattggta ctcaccaccc cggccgcacc 780  
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<210> 90  
 <211> 744  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 90  
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 cacaacggtc ccgggccggg gccg 744

<210> 91  
 <211> 88  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 91

Met Lys Ala Lys Val Gly Asp Trp Leu Val Ile Lys Gly Ala Thr Ile  
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Asp Gln Pro Asp His Arg Gly Leu Ile Ile Glu Val Arg Ser Ser Asp  
 20 25 30

Gly Ser Pro Pro Tyr Val Val Arg Trp Leu Glu Thr Asp His Val Ala  
 35 40 45

Thr Val Ile Pro Gly Pro Asp Ala Val Val Val Thr Ala Glu Glu Gln  
 50 55 60

Asn Ala Ala Asp Glu Arg Ala Gln His Arg Phe Gly Ala Val Gln Ser  
 65 70 75 80

Ala Ile Leu His Ala Arg Gly Thr  
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<210> 93  
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<210> 94  
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<220>  
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<400> 94  
caccatgagc ccgggctcg 19

<210> 95  
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ttacggcgta cgcgagtcag 20

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 <213> Artificial

<220>  
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<400> 102  
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<210> 103  
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 <212> DNA  
 <213> Artificial

<220>  
 <223> primer sequence

<400> 103  
 ttataggtca tcggattgag gtgata 26

<210> 104  
 <211> 24  
 <212> DNA  
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<220>  
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<400> 104  
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<210> 105  
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<220>  
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<400> 105  
 ttactccttg ctcgtaggt tggc 24

<210> 106  
 <211> 22  
 <212> DNA  
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<220>  
 <223> primer sequence



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<400> 107 ttacggtgac gagccggc	18
<210> 108 <211> 25 <212> DNA <213> Artificial	
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<210> 109 <211> 18 <212> DNA <213> Artificial	
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<p>&lt;400&gt; 119 ttaatacaac aatcgcgccg g</p>	21
<p>&lt;210&gt; 120 &lt;211&gt; 25 &lt;212&gt; DNA &lt;213&gt; Artificial</p>	
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